



Manuscript id: ZUMJ-2402-3192

Doi: 10.21608/ZUMJ.2024.272439.3192

ORIGINAL ARTICLE

Knowledge about Attention Deficit Hyperactivity Disorder among Primary School Teachers

Reham Barbari Farag^{1*}, Mona Mostafa Aboserea², Abdalla Hassen Mohamed El-Sharkawy², Amal Elwan Mohammed²

¹ Community Medicine Department, Fakous Faculty of Medicine, Zagazig University, Egypt.

² Community Medicine Department, Faculty of Medicine, Zagazig University, Egypt.

***Corresponding author:**

Reham Barbari Farag

Email:

Rbfarag@fakmed.zu.edu.eg

Submit Date: 24-02-2024

Revise Date: 03-03-2024

Accept Date: 06-03-2024

ABSTRACT

Background: Teachers spend a long time with primary school children and they are expected to be the first to observe behaviors indicative of attention deficit hyperactivity disorder (ADHD). Thus, teachers' knowledge about ADHD is vital. The objective of this study is to measure knowledge about ADHD among teachers in the Zagazig district.

Methods: A cross-sectional study was conducted at a representative sample of primary schools in the Zagazig district; 213 teachers were asked to complete knowledge of the Attention Deficit Disorder Scale (KADDS).

Results: 75.2% of the studied teachers have inadequate ADHD knowledge. Studied teachers had particularly poor knowledge about general information and treatment of ADHD, while their knowledge about symptoms and diagnosis was fair. Educational level and previous attendance of courses about ADHD were significantly associated with better knowledge.

Conclusion: Primary school teachers in the Zagazig district lack adequate knowledge about ADHD. Such poor knowledge could contribute to worsened outcomes in ADHD children. Therefore, the study recommends conducting educational programs about ADHD to improve teachers' knowledge about the disorder and incorporating educational materials about childhood mental health disorders into the curricula of the faculties of education.

Keywords:

Attention Deficit Hyperactivity Disorder, ADHD, Knowledge, Primary school, Teachers

INTRODUCTION:

Attention deficit hyperactivity disorder (ADHD) is a serious public health problem and is one of the most common neurodevelopmental disorders in childhood, placing a heavy burden on the family and society [1].

Worldwide, it is assessed that there is at least one child with ADHD features in every classroom [2]. In Arab countries, the prevalence of ADHD ranged from 1.3% to 16% [3]. In Egypt, 9.3% of preschoolers were diagnosed with ADHD [4].

ADHD can have negative impacts on social interactions, and academic performance; Moreover, it includes increased risky behaviors and loss of jobs [5]. Thus, ADHD is challenging for both the teachers and the children themselves. A teacher is a

significant person in recognizing ADHD problems and requesting referrals to clinical assessment at schools [6].

Primary school teachers play an essential role in the assessment of children's behaviors and can be the first ones to identify children with ADHD [7]. Therefore, teachers must understand ADHD to spot and take action on symptoms as soon as they appear. Furthermore, teachers take part in behavioral therapy, which is considered one of the primary treatment recommendations for ADHD along with pharmaceutical therapy [8]. Thus, the objective of this study was to measure knowledge about ADHD among primary school teachers in the Zagazig district.

METHODS

A cross-sectional study was conducted at a sample of primary schools in Zagazig district. Eight schools were randomly selected. As the total number of Primary school teachers in the Zagazig district is 3833 (according to the education directorate at El-Sharkia governorate), and the frequency of unsatisfactory level of knowledge among primary school teachers was 17.9% [17], with a 95% confidence level, at 80% study power and effect size =1, the sample size was 213, calculated using Openepi.

A pilot study was carried out on 10% of the selected sample in October 2022, no problems were reported by the teachers while completing the questionnaire, so no modifications were made, and data collected from the pilot study was included in the analysis. Data was collected during the period from December 2022 to April 2023 of the academic year 2022-2023, All primary school teachers in the eight selected schools were recruited.

Two questionnaires were used in this study; A: The sociodemographic characteristics questionnaire; included 8 questions about age, sex, residence, marital status, level of education, years of experience, previous dealing with ADHD children, and previous attendance of any symposium related to this subject. B: Knowledge of Attention Deficit Disorder Scale) (KADDS) Arabic version [9] to assess the level of knowledge that teachers have regarding ADHD. KADDS consists of 3 parts: 1) 15 questions about general information, 2) 9 questions about symptoms & diagnosis, and 3) 12 questions about treatment. The KADDS has good reliability; KADDS Cronbach's alpha value was 0.76. And sufficient validity (content and construct validity) [10].

Approvals from the Education Directorate at El-Sharkia Governorate, Zagazig East educational district, and Zagazig West educational district, an approval from the Institutional Review Board (IRB) for medical research ethics, Zagazig University, Faculty of Medicine (ZU-IRB) were obtained (Approval No. ZU-IRB 10049), the purpose and nature of the study were explained to school principals and school teachers to ensure their cooperation and informed consent was obtained

from school teachers before any participant was enrolled in the study.

Statistical analyses were conducted using SPSS version 22. Continuous normally distributed variables were presented as mean and standard deviation. Categorical variables were presented as numbers and percentages. Statistical significance was evaluated using Chi-square and Fisher exact tests to measure the association between categorical variables. A p-value of $\leq .05$ was considered statistically significant. The cut-off score for adequate knowledge was considered at 50% correct answers on the KADDS [11].

RESULTS

A total of 213 teachers completed the KADDS (Knowledge of Attention Deficit Disorders Scale). Results show that most of the participants (61.5%) are 40 years or older. The majority (85.4%) of the studied teachers are females. Only 26 of the participants (12.2 %) attended lectures/workshops about ADHD. Most of the participants (83.6%) have previous experience in dealing with ADHD children, (**Table 1**).

Only 53 (24.8%) of the participants have adequate knowledge about ADHD, (**Figure 1**).

Teachers who previously attended courses or workshops about ADHD have better knowledge about the disorder (P-value 0.002, OR=3.67), (**Table 2**).

Regarding the knowledge among teachers, the percentage of correct responses was 41.1% on all the questions on the KADDS. Knowledge of the studied teachers was particularly deficient in the KADDS sections concerned with general information and treatment of the disorder; with 35.6% & 36.3% correct responses respectively. Knowledge about symptoms and diagnosis of ADHD was found to be fair; with 56.7% of participants answering correctly to questions concerned with this section, (**Figure 2**).

Participants' overall KADDS scores had a mean of 14.73 (SD 3.77) out of the 36 questions, the general information score had a mean of 5.34 ± 1.89 out of 15, the symptoms and diagnosis section had a mean score of 5.10 ± 1.80 out of 9, and in the treatment section; participants had a mean score of 4.35 ± 1.91 out of the 12 questions, (**Table 3**).

Table 1: Sociodemographic characteristics of the studied participants (No. =213)

Sociodemographic characteristics	Frequency	Percentage
Age (Years)		
<40	82	38.5
>=40	131	61.5
Gender		
Male	31	14.6
Female	182	85.4
Residence		
Urban	125	58.7
Rural	88	41.3
Marital status		
Married	193	90.6
Others (Single-Divorced-Widow)	20	9.4
Educational level		
Graduate Degree	202	94.8
Post-Graduate Degree (Msc-Phd)	11	5.2
Experience in teaching (Years)		
<10	16	7.5
>=10	197	92.5
Attendance ADHD* lectures/ workshops		
Yes	26	12.2
Experience in dealing with ADHD* students		
Yes	178	83.6

ADHD: Attention Deficit Hyperactivity Disorder

Table 2: Distribution of knowledge among participants towards ADHD and association with sociodemographic characteristics (No. =213)

Sociodemographic characteristics	Adequate ^a No. (%) (No.=53)	Inadequate ^b No. (%) (No.=160)	Test of significance <i>χ</i> 2	Adjusted OR (95% CI)	P-value
Age (Years)					
<40 (No.=82)	21(25.6)	61 (74.4)	.038	1.06 (0.56-2.01)	.846 [€]
>=40 (No.=131)	32(24.4)	99 (75.6)			
Gender					
Male (No.=31)	6(19.4)	25(80.6)	.593	0.69 (0.27-1.78)	.441 [€]
Female (No.=182)	47(25.8)	135(74.2)			
Place of residence					
Urban (No.=125)	36(28.8)	89(71.2)	2.484	1.69 (0.87-3.25)	.115 [€]
Rural (No.=88)	17(19.3)	71(80.7)			
Marital status					
Married (No.=193)	49(25.4)	144(74.6)		1.36 (.43-4.27)	.82 ^F
Others (No.=20) (Single-Divorced-widow)	4(20)	16(80)			

Educational level					
Graduate Degree (No.=202)	47(23.3)	155(76.7)		0.25 (0.06-1.05)	0.059 ^F
Post-Graduate Degree (Msc-Phd) (No.=11)	6(54.5)	5(45.5)			
Experience in teaching (Years)					
<10 years (No.=16)	5(31.2)	11(68.8)		1.4 (0.36-4.67)	.73 ^F
10 years or more (No.=197)	48(24.4)	149(75.6)			
Attendance of ADHD lectures/ workshops					
Yes (No.=26)	13(50)	13(50)	9.996	3.67 (1.58-8.55)*	.002 ^{ε *}
No (No.=187)	40(21.4)	147(78.6)			
Experience in dealing with ADHD students					
Yes (No.=178)	44(24.7)	134(75.3)	.015	0.94 (.41-2.17)	.901 ^ε
No (No.= 35)	9(25.7)	26(74.3)			

a Adequate knowledge refers to KADDS score < 50%, b Inadequate knowledge refers to KADDS score >50%. ^ε test, ^F Fisher exact test, OR: odds ratio, CI: confidence interval * Statistically significant (p < .05).

Table 3: Mean scores of the studied teachers on different aspects of ADHD

Knowledge aspects	Maximum items score	Mean score
Total score	36	14.73±3.77
General information	15	5.34±1.89
Symptoms and diagnosis	9	5.10 ± 1.80
Treatment	12	4.35±1.91

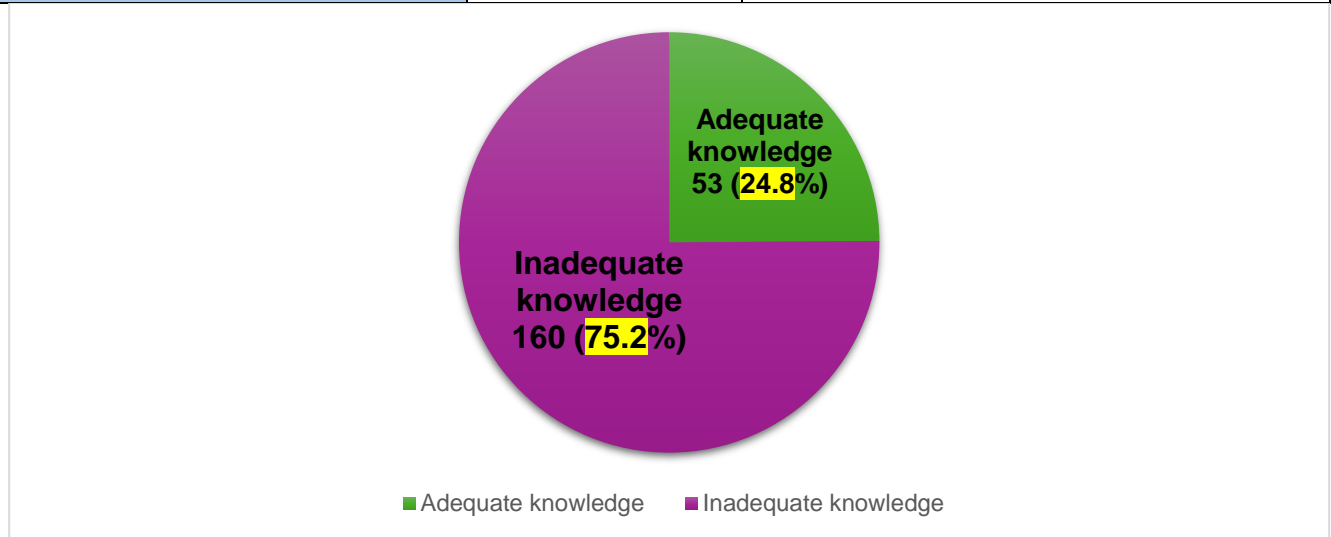


Figure 1: Level of knowledge about ADHD among studied participant

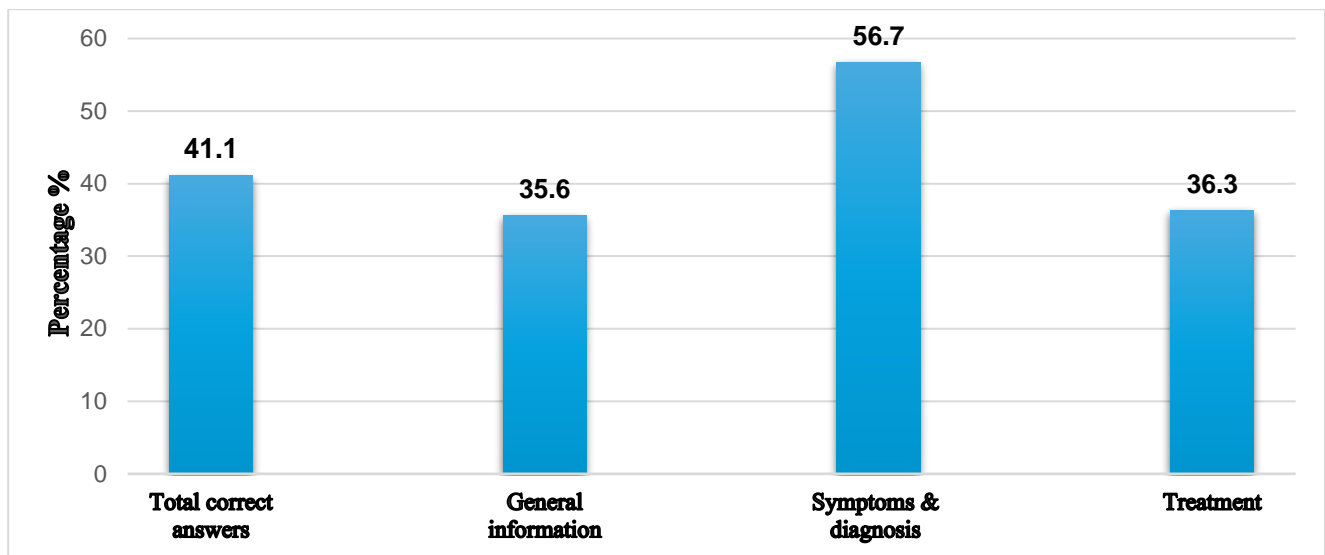


Figure 2: Percentages of the participants’ correct responses on total questions and the three sections of ADHD knowledge

DISCUSSION

Attention deficit hyperactivity disorder (ADHD) has a significant negative impact on academic achievement [12]. Teachers spend a lot of time with kids. Typically, they are conscious of how kids behave in classroom settings. Consequently, they are anticipated to be the first to notice and identify ADHD in their pupils [13]. Inadequate teacher knowledge can worsen the consequences and prognosis of ADHD and increase the likelihood of a delayed diagnosis [3].

The present study indicated that there is a knowledge gap regarding ADHD among primary school teachers in Zagazig district, 75.2% of the studied teachers have inadequate knowledge about ADHD. These results demonstrate that faculties of education, education directorates, and school principals have not been effective in educating teachers to deal with students who have special needs, such as those with ADHD.

The results of the current study are consistent with the findings of a national study conducted in 2015 on primary school teachers in Assiut, where adequate knowledge was 23.9% [14]. However, this comes lower than the results of a study conducted in Iran in 2019 [15] where adequate knowledge among primary school teachers reached 65%. Results of the current research also come lower than results reported by studies that used the same tool (KADDS); such as a recent study conducted by Dessie et al. on primary school teachers in Ethiopia in 2020 [11] that also had the same cut-off score for adequate knowledge; in which 44.8% of the

participants had adequate knowledge about ADHD. Another study [7] conducted in 2016 in Saudi Arabia also used KADDS but considered the cut-off at 60% reported adequate knowledge of 59% among Saudi male primary school teachers. The observed discrepancy may be the result of a lack of care directed to childhood mental illness and deficiency of training teachers to deal with ADHD and other mental health disorders in Egypt.

Participants’ overall score had a mean of 14.73 ± 3.77 out of the 36 KADDS questions, and an overall correct answers percentage of 41.10%. This is consistent with results reported by Saad et al. in a study conducted in Emirates [16] where participants’ overall scores had a mean of 14.32 ± 5.242 , corresponding to 39.8% of teachers answering correctly. On the other hand, the overall correct answers percentage in the current study comes lower than that reported by a Greek study conducted in 2020 [18] in which Galanis et al. reported total correct answers percentage of 49.9% achieved by Greek primary school teachers. The similarity in inadequate ADHD knowledge among teachers in Emirates and Egypt can be explained by the lack of ADHD awareness and defective training of teachers in both countries. Also, due to the relatively recent recognition of ADHD as a mental disorder and agreeing on its name; instead of being just hyperkinetic reaction of childhood till 1960s.

On the first subscale of the KADDS concerned with general knowledge about ADHD; participants’ correct responses percentage was 35.6%, likewise was reported by Saad et al. [16] with 34.4% of

teachers answering correctly on the first subscale. But lower than the findings detected by Dessie et al. [11] and Galanis et al. [18] in which the correct responses percentage was 45.9%, and 47.5%, respectively. This might be explained by the higher percentage of participants who had post-graduate degrees in the mentioned studies (38.4% and 34.2%, respectively in comparison to 5.1% in this research). On the second subscale which involves 9 questions regarding symptoms and diagnosis of ADHD; 56.7% of the answers were correct, likewise revealed Saad et al. [16] where correct answers percentage was 56.3%. These findings come higher than those reported by Dessie et al. [11] in which the correct responses percentage on the second subscale was only 25.9%. Participants' acceptable knowledge about symptoms and diagnosis - in comparison to the alarmingly poor knowledge regarding general information and treatment- can be explained by the recently broadcasted TV show which addressed the daily life of an ADHD patient with special attention to her symptoms, but without an actual focus on other aspects of the disorder. On the third subscale of the KADDS which comprises 12 questions about the treatment of ADHD, Participants had a correct response percentage of 36.3%, similar to results found by Saad et al. [16] where a correct response percentage of 34.1% was detected. However, these results are lower than those found by Dessie et al. [11] which reported correct responses percentages of 58.5% on the third KADDS subscale. Also, lower than findings revealed by Galanis et al. [18] in which correct response percentage on questions about treatment was 40.6%. Again, the higher results of the Ethiopian and Greek studies might be due to the higher educational level of teachers in the referred studies.

Based on the findings of the present study; deficient ADHD knowledge among school teachers in Zagazig district is merely evident in aspects concerned with general information and treatment of the disorder; but their knowledge regarding symptoms and diagnosis could be considered fair. This might be due to the fact that symptoms and diagnosis are the most obvious issues of the disorder; that teachers are most likely to come in contact with, while general information and treatment of ADHD represent more complex issues; that teachers may not deal with. These findings are consistent with findings revealed by Hosseinnia et al. [15], Saad et al. [16], and Awadalla et al. [17], but contrary to those found by Dessie et al. [11] that

knowledge about general information and treatment was fair; but knowledge regarding symptoms and diagnosis was poor. This difference may have resulted from the differences in degree of education acquired and the educational curricula utilized to train teachers. Better ADHD knowledge was found to be associated with previous attendance of lectures, courses, or workshops about ADHD (OR=3.67, P-value= 0.002), these findings are consistent with those revealed by Alfageer et al. [7], Aly et al. [14], and Galanis et al. [18]. Seminars and training sessions help teachers become more knowledgeable about ADHD, strengthen their character to deal with challenging situations in the classroom, increase their ability to manage children with ADHD, and empower them to make decisions on their own.

Most of the studied teachers (83.6%) had previous experience in teaching children with ADHD, however; previous experience had no statistically significant association with ADHD knowledge; contradictory to findings reported by studies conducted in Saudi Arabia [7] and Emirates [16], this may be explained by the higher student/class ratio in Egypt (56) (in comparison to 18 in Emirates and 19.3 in Saudi Arabia, respectively), which limits the teacher's ability to provide special attention to pupils' special needs.

The majority of the participants (92.5%) had work experience equal to or greater than 10 years, nonetheless; work experience had no significant association with ADHD knowledge, this comes in accordance with findings of Alfageer et al. [7], Aly et al. [14], and Saad et al. [16], on the contrary; in a study conducted in Mansoura [17] Awadalla et al. reported that recently graduated teachers with less than 5 years work experience were more knowledgeable than teachers with longer years of experience; this finding was referred to incorporation of Childrens' mental issues such as ADHD in the curricula of Mansoura university.

CONCLUSION

Primary school teachers in Zagazig district lack adequate knowledge about ADHD. Lectures and workshops about the disorder are associated with higher ADHD knowledge in the studied teachers. Thus, school principals should enhance teachers' knowledge by setting up seminars on ADHD in children and training programs on classroom management of ADHD. Mass media should share information about magnitude, manifestation, and management of the disorder. Further research

should address teachers' attitude and behavior towards ADHD.

Conflict of interest: None

Financial Disclosure: None

Funding information: None

REFERENCES

1. Zagzoog TA, Elshazly RM, Soliman MS. The Prevalence of Attention Deficit Hyperactivity Disorder (ADHD) Among Elementary School Children: The Effect of Certain Demographic Variables. *MJESTP*. 2021;75-90.
2. Latouche AP, Gascoigne M. In-Service Training for Increasing Teachers' ADHD Knowledge and Self-Efficacy. *J Atten Disord*. 2019;23(3):270-281.
3. Alshehri AM, Shehata SF, Almosa KM, Awadalla NJ. Schoolteachers' knowledge of attention-deficit/hyperactivity disorder—current status and effectiveness of knowledge improvement program: A randomized controlled trial. *International Journal of Environmental Research and Public Health*. 2020;17(15):1-10.
4. B.Elsaid N. Prevalence of Attention Deficit Hyperactivity Disorder among Preschool Children (3-6 Years), Menoufia Governorate. *The Egyptian Family Medicine Journal*. 2018;2(2):1-15.
5. Magnus W, Nazir S, Anilkumar AC, Shaban K. Attention Deficit Hyperactivity Disorder. In: *StatPearls*. StatPearls Publishing; 2024.
6. Shroff HP, Hardikar-Sawant S, Prabhudesai AD. Knowledge and Misperceptions about Attention Deficit Hyperactivity Disorder (ADHD) Among School Teachers in Mumbai, India. *International Journal of Disability, Development and Education*. 2017;64(5):514-525.
7. Alfageer H, Aldawodi M, Al Queflie S, et al. Knowledge and attitude of male primary school teachers about attention deficit and hyperactivity disorder in Riyadh, Saudi Arabia. *Journal of Natural Science, Biology and Medicine*. 2018;9(2):257-262.
8. Wolraich ML, Hagan JF Jr, Allan C, et al. Clinical Practice Guideline for the Diagnosis, Evaluation, and Treatment of Attention-Deficit/Hyperactivity Disorder in Children and Adolescents [published correction appears in *Pediatrics*. 2020 Mar;145(3)]. *Pediatrics*. 2019;144(4):e20192528.
9. Scitutto MJ, Terjesen MD, Kučerová A, et al. Cross-National Comparisons of Teachers' Knowledge and Misconceptions of ADHD. *International Perspectives in Psychology*. 2016;5(1):34-50.
10. Schmiedeler S. KADDS - Knowledge of Attention Deficit Disorders Scale - deutsche Fassung. Published online 2017.
11. Dessie M, Techane MA, Tesfaye B, Gebeyehu DA. Elementary school teachers knowledge and attitude towards attention deficit-hyperactivity disorder in Gondar, Ethiopia: a multi-institutional study. *Child and Adolescent Psychiatry and Mental Health*. 2021;15(1).
12. Jangmo A, Stålhandske A, Chang Z, et al. Attention-Deficit/Hyperactivity Disorder, School Performance, and Effect of Medication. *Journal of the American Academy of Child and Adolescent Psychiatry*. 2019;58(4):423-432.
13. Al-Moghamssi E, Aljohani A. Elementary school teachers' knowledge of attention deficit/hyperactivity disorder. *Journal of Family Medicine and Primary Care*. 2018;7(5):907.
14. Aly SE, Mohammed F, Ahmed Z. Teachers' perception and attitudes toward attention deficit hyperactivity disorder in primary schools at Assiut City. *AAMJ*. 2015;13(4):165-173.
15. Hosseinnia M, Mazaheri MA, Heidari Z. Knowledge, attitude, and behavior of elementary teachers regarding attention deficit hyperactivity disorder. *Journal of Education and Health Promotion*. 2020;9(1).
16. Saad S, Aljanahi F, Coumaravelou S, Agha A, Alsamiri M, Allami S. Knowledge about attention-deficit/hyperactivity disorder among primary schoolteachers in Sharjah, UAE. *Journal of Education and Health Promotion*. 2022;11(1):99.
17. Awadalla NJ, Ali OF, Elshaer S, Eissa M. *Role of School Teachers in Identifying Attention Deficit Hyperactivity Disorder among Primary School Children in Mansoura, Egypt*. *East Mediterr Health J*. Vol 22.; 2016.
18. Galanis P, Tsakalaki A, Papa MT, Fragkou D. Determinants of teachers' knowledge about attention deficit hyperactivity disorder. *International Journal of Caring Sciences*, 14(2), 909-918.; 2021.

Citation

Farag, R., aboserea, M., El-Sharkawy, A., Mohamed, A. Knowledge about Attention Deficit Hyperactivity Disorder among primary school teachers. *Zagazig University Medical Journal*, 2024; (4998-5004): -. doi: 10.21608/zumj.2024.272439.3192