



## Saudi Children with Attention Deficit Hyperactivity Disorder (ADHD) and their Assessment of Teachers Knowledge

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### ABSTRACT

**Aims:** Attention deficit hyperactivity disorder (ADHD) is really a medical condition that effect on children and adults. To identify the teachers' knowledge and attitude regarding ADHD is vital for this progression of psycho-academic and exercising methods for teachers. The present cross-sectional study was conducted among male school teachers to know the knowledge and awareness of ADHD.

**Methods:** A Structured questionnaire was distributed among 120 school teachers. The questionnaire component consists of 7 multiple-choice questions regarding the symptoms of ADHD, 5 queries regarding the etiology of the issue, 5 questions regarding the therapy, and 6 queries concerning the outcomes of ADHD. Data was collected and statistical analysis done. **Results:** Their mean age was  $38.38 \pm 5.77$  years, ranging from 25 to 58 years, with a mean level of teaching experience of  $12.63 \pm 4.11$  years. The teachers' understanding was more specific regarding the symptoms of ADHD (73%), accompanied by their consequence's knowledge of ADHD (64.9%). A mean of 61.1% and 56.8% of teachers offered appropriate answers concerning the etiology and therapy for the problem, respectively.

**Conclusion:** Concluded that teachers got satisfactory knowledge of ADHD and suggested they should improve even more knowledge on its causes, symptoms, and treatment to boost the educational functionality of students.

**Key words:** ADHD, Special Education Needs (SEN), Knowledge, Questionnaire, Teachers, Children, Saudi Arabia

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### INTRODUCTION

Attention deficit hyperactivity disorder (ADHD) is a personality condition regarded as a persistent and developmentally unacceptable exemplary case of impulsivity, lack of attention, and over activity [1]. The

primary indicators impact the intellectual, academic, personality, psychological, and social working of the kids. It is a mostly diagnosed behavior problem of childhood, affecting 8-12% of school-aged children. Occasionally these children have a problem in sitting still, attending to or controlling impulsive habits, and significantly hinder everyday life [2]. Exploratory research on adults' attention deficit hyperactivity disorder (ADHD) disclosed that children that are diagnosed with ADHD mature and become a grown-up patient of ADHD [3]. Identifying them soon and dealing with them would decrease the burden of the disorder and may assist in better therapy of the comorbid conditions. ADHD is widespread, and impacts 2%-18% of school-going kids [4]. A study with

primary school teachers in Iran reported reasonably low knowledge about the sources of ADHD; they regarded the cause had been either biological/genetic or parental spoiling [5]. The female teachers from the academic institutions of Makkah also documented insufficient details regarding ADHD [6]. Two types of research from Saudi Arabia possess documented the 11.6% and 16.3% prevalence of ADHD among primary school kids [7,8]. Nevertheless, a survey performed at primary school in Dammam documented a higher prevalence of the lack of attention group in comparison to over-activity among male school children [9].

The etiology of ADHD is unfamiliar, although several Indian case studies suggested that genetic, prenatal, and postnatal health, preterm birth, gender, and toxins exposure results in the risk of establishing ADHD among children. This is a brain-centered biological problem [10]. Chronic deficiencies of certain minerals such as for example iron; zinc, magnesium, iodine, and insufficient nutritional intake of long-chain polyunsaturated essential fatty acids may possess a significant effect on the advancement and deepen of the outward symptoms of ADHD in children. The diagnosis is mainly clinical, predicated on the detailed history of a child's early development and immediate observation by parents and teachers. The precise symptoms of ADHD could be distinguished generally at 5 years [2]. The majority of the children with ADHD aged 3-11 years spend their time in the home or schools. A child suffering from attention-deficit or hyperactivity faces a lot of difficulties in societal and academic lifetime. Getting with their classmates and peers could be challenging. At school, they will have trouble with attending to, managing their behavior, and frequently disrupt classroom activities. Thus, parents and teachers should be adequately ready to identify and cope with children experiencing ADHD [11].

As students attached to their teachers in lots of ways each day by spending most of their time in academic institutions, practitioners will rely on school teachers to provide information to assist in establishing the healthcare medical diagnosis of ADHD. Teachers with limited knowledge of ADHD may don't determine children with signs or symptoms who also may normally experience the advantages of examination and medical therapy [12]. Negative teachers' mindset might produce demotivation and self-deprecation by learners getting ADHD [13]. Teachers must have required knowledge that allows them to effectively involve along the way of handling these sections of children. Teachers who've got a great understanding of ADHD, usually are better prepared to maintain a position to provide adequate teaching help and render required assistance for children with ADHD. The complete management contains involvement from the school teachers and parents, along with medical treatment, this obtaining the cornerstone of the task [14]. The purpose of the therapy is not only to reduce the signs or symptoms but efficiency recuperation aswell. Involvement from healthcare, education, and teaching professionals in the

many phases of scientific assessment and therapy of kids and adolescents with ADHD make sure it is essential to investigate the morals, information, and attitudes of the training experts who engage with kids and adolescents using this type of disorder. Thus, teachers play crucial roles within reporting symptoms, advising parents to get an assessment, and assisting children with ADHD to accomplish academically and socially. It is essential to examine teachers' knowledge and attitudes concerning ADHD systematically. Teachers' attitudes didn't study until now, and there's little literature offering a theoretical understanding of teachers' attitudes and knowledge of ADHD inside the training program [15]. The existing research investigates teachers' knowledge of ADHD and their attitudes regarding teaching children with ADHD from within theoretical frameworks of content and attitude power.

## MATERIALS AND METHODS

A cross-sectional study was conducted with a sample of 120 teachers, who had an extended contact period with the school students in 14 selected governmental primary schools at Abha, Saudi Arabia. All Saudi male teachers currently employed in male primary schools of the study region were included. Any personnel focusing on administrative positions; who have been not directly involved with teaching the students had been excluded. Inclusion requirements include teachers handling the children with a generation of 6-12 years, that are willing to take part and who understands Arabic or English. For sample size, the awareness of teachers about ADHD was regarded as 42.6% predicated on previous research done in Riyadh [16]. With 95% confidence interval and 5% margin of error, the perfect sample size calculated was 120 teachers for this study [11] convenience sampling technique was employed for the enrollment of participants.

A self-administered structured questionnaire from two individual published research was adapted for information collection ADHD [6,16]. The knowledge of Attention Deficit Disorder Scale (KADD) was useful for assessing teachers' knowledge concerning ADHD. Questionnaires had been translated into the local vocabulary (Arabic) and then back again to English to make sure that the translated edition provides proper meaning. The questionnaire includes structured, self-administered queries that were examined for the face validity of this content of the translated questions. The content validity index for different scoring items was 0.89. Reliability was assessed by calculating inner consistency using Cronbach's test that it was found to be suitable (0.80). Pilot research was conducted prior to starting data selection on (10%) of the sample included in the sample for the non-existence of any amendment in the sheet. The purpose of the pilot study would be to test the clearness of the tool also to guide the time necessary to answer the sheet.

The questionnaires collected demographic information

consists of the info on demographic variables like the age of the teacher, academic qualification, regular income, teaching experience, marital status, experience with ADHD child, and previous knowledge on ADHD and. The questionnaire component consists of 7 multiple-choice questions regarding the symptoms of ADHD, 5 queries regarding the etiology of the issue, 5 questions regarding the therapy, and 6 queries concerning the outcomes of ADHD. The individuals were asked to provide their response to each product as either "strongly agrees", "agree", "disagree", or "strongly dis-agree". The sampling method utilized in the current study was convenience sampling, and the questionnaires were distributed to all the 120 government school teachers and collected back again on the same day time. Participation in the survey has been voluntary, and all individuals received an informed consent form combined with the questionnaire. Anonymity and confidentiality had always been maintained throughout the entire study.

Data collected were put through both descriptive and analytical statistical measurements that were used to spell out the primary variables by SPSS 18 (IBM Corporation, Armonk, NY, USA) software. Finally, information was analyzed, and new variables were computed predicated on total ratings. Chi-square, ANOVA was used to evaluate the qualitative and quantitative variables. The assessment of means of knowledge ratings and attitude scores by t-check for two independent groups. The statistical significance for the

**Table 1: Comparison of knowledge of primary school teachers on ADHD with selected demographic variables.**

Sl. No.	Demographic data	Chi-square value	P value
1	Age	11.382*	0.011
2	Educational Qualification	8.948	0.433
3	Experience in teaching	9.543	0.822
4	Place of Residence	16.198*	0.012
5	Income per month	14.238*	0.024
6	Marital status	6.347	0.622
7	Experience on ADHD child	4.753	0.19
8	Previous knowledge on ADHD	1.295	0.281
9	Does your school employ helpers for pupils with ADHD	3.492	0.129

\*Significant p<0.05

coefficients in the statistical analyses will undoubtedly be tested at 0.05 ( $\leq 0.05$ ) level.

## RESULTS

A total of 135 teachers were invited for participation, 120 (90%) responded to the questionnaire. Their mean age was  $38.38 \pm 5.77$  years, ranging from 25 to 58 years, with a mean level of teaching experience of  $12.63 \pm 4.11$  years. Eighty-two teachers got married, **Table 2: Knowledge of the preschool teachers regarding different aspects of ADHD.**

Questionnaire	Agree/Strongly Agree n (%)
<b>Symptoms: A child with ADHD</b>	
Does not pay close attention inside class	91 (75.8)
Does not appear to listen when spoken directly	85 (70.8)
Avoids participating in assignments that require mental effort	88 (73.3)
Is frequently forgetful during day to day activities	77 (64.1)
Often restless in classroom	81 (67.5)
Frequently butts into conversations or intrudes about others	94 (78.3)
Often talks excessively and has difficulty playing in leisure time	98 (81.6)
<b>Etiology</b>	
ADHD is because a bad upbringing	58 (48.3)
Symptoms could be exacerbated by tension and family conflicts	89 (74.1)
ADHD is a congenital disorder	66 (55.0)
ADHD is a neurobiological disorder	83 (69.1)
ADHD is a chromosomal disorder	71 (59.1)
<b>Treatment</b>	
Treatment with medications	93 (77.5)
Psychotherapy me be benefitted for some children	76 (63.3)
These children benefit from additional help in school	88 (73.3)
Home and school can be helpful in decreasing their symptoms	49 (40.8)
Electroshock is effective in severe cases	35 (29.1)
<b>Consequences: Children with ADHD</b>	
May have academic problems	98 (81.6)
Will have depression later on	89 (74.1)
May have ADHD symptoms during adulthood	71 (59.1)
Have a lower IQ and lower degree of self-esteem	88 (25.4)
Exhibit destructive habits and commit theft	63 (52.5)
May show aggressive behavior toward other children	58 (48.3)

**Table 3: Association of knowledge scores among school teachers.**

Variables	Knowledge			P-value
	Insufficient (%)	Good (%)	Very Good (%)	
Course attended on ADHD				
Yes	8 (19)	25 (60)	9 (21)	
No	28 (36)	32 (41)	18 (23)	0.101
Experience on ADHD child				
Yes	19 (28)	36 (53)	13 (19)	
No	25 (48)	18 (35)	9 (17)	0.063

**Table 4: Comparison of mean  $\pm$  S.d. of Knowledge score and Attitude score by t-test for two independent groups.**

No.	Mean $\pm$ Std. Deviation	Diff. mean $\pm$ S.E.M.	t, d.f	P value
Knowledge score	120	$11.3743 \pm 1.08727$	$0.10824 \pm 0.18464$	0.727, 244
Attitude score	120	$12.5652 \pm 1.52393$	$0.19187 \pm 0.23629$	0.975, 244
NS: Not significant p>0.05				

38 were unmarried. Highest qualification achieved by most teachers were bachelor's degree [94 (78%)]. Table 1 shows that the chi-square statistics were the significance of knowledge score of selected demographic characteristics of primary school teachers like age of the teachers ( $\chi^2=11.382$ ,  $p<0.05$ ), place of residence ( $\chi^2=16.198$ ,  $p<0.05$ ), monthly income ( $\chi^2=14.238$ ,  $p<0.05$ ) and not a significant association of knowledge scores with other demographic variables  $p>0.05$ . The data of the preschool teachers regarding the ADHD symptoms, etiology, treatment, and consequences were tested. As defined in Table 2, their understanding regarding the signs and symptoms and consequence of ADHD has been superior to their understanding of other components of the issue. The teachers' understanding was more specific regarding the symptoms of ADHD (73% correct answers), accompanied by their consequence's knowledge of ADHD (64.9% right answers). A mean of 61.1% and 56.8% of teachers offered appropriate answers concerning the etiology and therapy for the problem, respectively. The demographic variables consisting of age, working experience, and educational degree revealed no significant association with overall knowledge toward ADHD. Nevertheless, those that either attended programs on ADHD or trained an ADHD child had even more knowledge about the problem than others [ $P < 0.01$ ] (Table 3). Distribution of primary school teachers according to their knowledge scores on ADHD was shown in Table 4.

## DISCUSSION

Teachers play a significant function both before and following the child was identified as having Attention-Deficit/Hyperactivity Condition (ADHD). During the pre-diagnostic period, teachers will be the closest and acquainted person, aside from family members, who can report crucial information regarding a child's in-class habits and recommend him to end up being assessed and identified. Following diagnosis, teachers were anticipated to help significantly in managing ADHD children by adjusting the classroom atmosphere and delivering cognitive-behavioral treatment to market self-control [17]. Kids with ADHD might enjoy the advantages of initial analysis as the behavioral problems from the scenario frequently begin prior to the beginning of primary school. ADHD in preschoolers is really a relatively safe medical diagnosis, and elementary school teachers would be the people who probably notice ADHD signs and symptoms in children for the first time [18]. Luckily, the data of the preschool teachers within our sample regarding the symptoms of ADHD has been comparatively more. Most typical symptoms of ADHD answered were these children usually speaks excessively and contains problem enjoying in free time and gives less interest in the classroom. These outcomes were similar to the record in Tabriz, Iran [19]. Teachers are generally better knowledgeable about symptoms but knew less concerning the etiology, the span of ADHD, and therapy [20].

Our survey reported statistically no significant relationship between a teacher's knowledge and attendance of prior programs. Comparable findings were seen in a study completed by Sarraf, et al. [21] said that there was no association in teachers' knowledge between those that didn't or previously had the training [21]. A structured program was said among the primary resources of information regarding ADHD described in a recently available study from Saudi Arabia [16]. Incidentally, years of experience and academic qualification had no substantial contribution to better knowledge between surveyed teachers, but it's significant in connection with age the teachers. Muanprasart, et al. [22] reported that younger teachers had better ADHD knowledge. Moreover, Youssef [23] said that instructors with the postgraduate diploma and who received teaching for ADHD scored higher, much like that seen in our study. Various other factors, such as teacher self-efficacy, trained in psychology, teaching pupil with ADHD, and years of knowledge, are also documented in the literature to promote ADHD knowledge.

One of the studies conducted by West et al. [24], concluded that parents knew more than teachers, specifically concerning the causes and therapy of ADHD. The results furthermore uncovered that myths about ADHD are obvious between mothers and fathers and teachers, but the training for teaching professionals is essential to improving knowledge. Another study in America [25], showed that teacher trainees' actually had increased knowledge of ADHA as compared to undergraduate degree students. They answered 60 percent of items precisely and showed good knowledge about medication for ADHD; their understanding of the etiology of ADHD was much less satisfactory, and 15 % of teacher trainees thought that there is a threat of addiction linked to ADHD medication. In Sri Lanka, a study of 202 elementary school teachers having an average of 15 years of working experience, discovered that 80 % assumed that ADHD is 'a consequence of bad upbringing' [26].

The entire outcomes were much like a written survey regarding Korean preschool teachers [27]. Family conflicts were the most common recognized psychological and behavioral problems, which is accepted by the majority of teachers as a common symptom of ADHD. Prior studies have suggested that crucial indicators in knowledge regarding ADHD are contacted with involved children. 72% of our study individuals had previous experience with ADHD children within their teaching carrier. Generally, knowledge improves with experience, specifically with regards to encounters with kids with ADHD in the classroom [28]. Starting, teachers tend to make a complaint about the insufficient preparation for teaching various pupils in the teacher education program [29]. Although instructor training programs include these subjects now, nearly all teachers working at universities were prepared because of their profession in different ways. Some experienced teachers nevertheless have a considerable effect on

educating teachers by supervisory student teachers' training practices [30].

Exposure of children with ADHD in the classroom can be an essential aspect of teachers' knowledge about the condition. Mainly, teachers who reported getting earlier contact with children with ADHD registered significantly increased overall knowledge ratings than teachers without like exposure. Furthermore, the amount of this exposure could also significantly relate to ADHD knowledge. That's, Sciuotto et al. demonstrated that teachers' professional training with the involvement of ADAH children had shown positively linked to their increased knowledge score [30]. The school-home relationship is compromised as the teachers tend to blame parents for children's complications (either ADHD or depression); thus, the good home-school relationship is essential to help the growth of children with special education needs (SEN). The knowledge of the preschool teachers was better concerning the treatment plans for ADHD. It is similar to the results of knowledge shown by Iranian and Korean school teachers [19,27]. Most of the teachers had good knowledge regarding the symptoms of ADHD that can be treated by medicine, psychotherapy treatment, and extra help from the school. One research showed that the teachers accepted that specific behavioral modifications are effective in treating the ADHA children [27]. Pharmacological therapy is more effective compared to physiotherapy in the treatment for ADAH children (78% vs. 63%). They are preferred in treating ADHD, specifically, children with substantial comorbid behavioral difficulties, which are adversely affecting family and school operating [31].

Du Paul, et al. [32] carried out a meta-evaluation of 63 researches and discovered that behavioral interventions, especially those based on beneficial reinforcement and punishment, are very useful in enhancing classroom behavior. Anhalt, et al. [33], highlighted the efficacy of making use of support for kids with ADHD, showing that reinforcement works well in reducing over activity and in improving on-task behavior and educational efficiency in these children. Moreover, it was proven that both reinforcement and punishment ought to be applied concurrently for the finest efficacy. Researches that studied the beliefs of psychologists concerning this problem have got mentioned they considered it to become a disease with an extremely psychosocial component, susceptible to end up being modified with environmental actions. From the records in addition, it seems that as teachers are more encountered they become less tolerant of ADHD-type behaviors within their classroom and that teachers with an increased degree of knowledge regarding ADHD and the ones who've educated students having an ADHD diagnosis have negative thinking about students who present ADHD-type behaviors, this illustrates that skilled teachers and the ones who are proficient in ADHD may reap the benefits of further ADHD-specific training, probably concentrating on practical classroom interventions instead of knowledge facts [34]. School teachers had

higher knowledge regarding the consequences of ADHD as seen to be predicated on their individual experiences, and they assumed that ADHD could end up with academic complications (81.6%) and future depressive disorder (74.1). Teachers' ignorance of ADHA in the classroom has caused incomplete support for these desired children's [35]. In one of the studies, concluded that parents of school children think that teachers' ignorance with poor knowledge of ADHD may lead their children to be stigmatized and inadequate support in the school [35]. Teachers should be competent in dealing with children with ADHD in the school environment, along with the combined help of parents and medical professions [36]. For increasing the attention or concentration of ADHD children over an interval of time, these children ought to be motivated to enjoy exercises that want a significant quantity of concentration, such as video-online games and assignments, to set up the colored blocks in a particular sequence.

The current study has many limitations. The research addressed the issue of ADHD in primary school children and the teachers residing in Abha city only. A more substantial national survey should be conducted with a representative sample to handle this critical problem among children throughout Saudi Arabia. The private schools weren't included because of limited time and assets for the inclusion of bigger sample size; future research should be conducted to measure the situation in private schools. A similar study could be carried out as longitudinal research using a large sample and also evaluation of urban and rural locations. As this research was done just on the primary school level, the study didn't know the probable some other misconceptions of teachers at the secondary school level. Also, the analysis didn't consider teachers' misconceptions of ADHD in rural schools that could be the most severe because of variations in data accessibility.

## CONCLUSION

ADHD is the most common disorder involving school children. Earlier referral and effective treatment will prevent further problems in childhood. This research reported that teachers got satisfactory knowledge of ADHD and suggested they should improve even more knowledge on its causes, symptoms, and treatment to boost the educational functionality of students. We have been medical care personnel to teach the teachers concerning the prevention and promotion of psychological health in children. In Saudi Arabia, teachers don't have a special education about ADHD; instead, they will have comprehensive modules on educating special needs children as one part of their bachelor's education in Special Educational Requirements. Although the teachers get involved in professional development that sometimes addresses problems such as for example, ADHD, their methods are predominantly produced from classroom interaction with school children with ADHD. Teachers who had participated in the training program or workshop before or taught ADHD children had higher

knowledge. The public health and schooling authorities should carry on their efforts to improve awareness among parents, teachers, and healthcare employees about the various methods of ADHD recognition and administration to enhance children's standard of living and studying abilities ADHD curriculum and training programs should be integrated into the teachers' education training in Saudi Arabia.

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#### CONFLICTS OF INTEREST

There are no conflicts of interest.

#### REFERENCES

1. American Psychiatric Association. Diagnostic and statistical manual of mental disorders. 5<sup>th</sup> Edn, American Psychiatric Publishing 2013.
2. Brien JM, Felt BT, Van HarrisonR, et al. Attention deficit hyperactivity disorder guidelines for clinical care. University of Michigan Health System 2005.
3. Bhatia MS, Nigam VR, Bohra N, et al. Attention deficit disorder with hyperactivity among paediatric outpatients. *J Child Psychol Psychiatr* 1991; 32:297-306.
4. Alqahtani MM. Attention-deficit hyperactive disorder in school-aged children in Saudi Arabia. *Eur J Pediatr* 2010; 169:1113-1117.
5. Khademi M, Rajeziesfahani S, Noorbakhsh S, et al. Knowledge and attitude of primary school teachers in Tehran/Iran towards ADHD and SLD. *Global J Health Sci* 2016; 8:141.
6. Munshi A. Knowledge and misperceptions towards diagnosis and management of attention deficit hyperactive disorder (ADHD) among primary school and kindergarten female teachers in Al-Rusaifah district, Makkah City, Saudi Arabia. *Int J Med Sci Public Health* 2014; 3:444.
7. Homidi M, Obaidat Y, Hamaidi D. Prevalence of attention deficit and hyperactivity disorder among primary school students in Jeddah city, KSA. *Life Sci J* 2013; 10:280-285.
8. Al Hamed JH, Taha AZ, Sabra AA, et al. Attention Deficit Hyperactivity Disorder (ADHD) among male primary school children in Dammam, Saudi Arabia: Prevalence and associated factors. *J Egypt Public Health Assoc* 2018; 83:165-182.
9. Al Hamed JH, Taha AZ, Sabra AA, et al. Attention Deficit Hyperactivity Disorder (ADHD): Is it a health problem among male primary school children. *Bahrain Med Bulletin* 2008; 30:1-9.
10. Hockenberry MJ, Wilson D. Wong's nursing care of infants and children-E-book. Elsevier Health Sciences 2018.
11. Bope ET, Kellerman RD. Conn's Current Therapy 2013: Expert Consult: Online. Elsevier Health Sciences 2012.
12. Kikas E, Timoščuk I. Student teachers' knowledge about children with ADHD and depression and its relations to emotions. *Emot Behav Difficulties* 2016; 21:190-204.
13. Kendall L. 'The teacher said I'm thick! experiences of children with attention deficit hyperactivity disorder within a school setting. *Support Learn* 2016; 31:122-137.
14. Weyandt LL, Fulton KM, Schepman SB, et al. Assessment of teacher and school psychologist knowledge of attention-deficit/hyperactivity disorder. *Psychol Schools* 2009; 46:951-961.
15. Kos JM, Richdale AL, Hay DA. Children with attention deficit hyperactivity disorder and their teachers: A review of the literature. *Int J Disabil Dev Edu* 2006; 53:147-160.
16. Alfageer H, Aldawodi M, Al Quefli S, et al. Knowledge and attitude of male primary school teachers about attention deficit and hyperactivity disorder in Riyadh, Saudi Arabia. *J Natural Sci Biol Med* 2018; 9:257-262.
17. Strelow AE, Dort M, Schwinger M, et al. Influences on pre-service teachers' intention to use classroom management strategies for students with ADHD: A model analysis. *Int J Edu Res* 2020; 103:101627.
18. Riddle MA, Yershova K, Lazzaretto D, et al. The preschool attention-deficit/hyperactivity disorder treatment study (PATS) 6-year follow-up. *J Am Acad Child Adolesc Psychiatr* 2013; 52:264-278.
19. Amiri S, Noorazar SG, Fakhari A, et al. Knowledge and attitudes of preschool teachers regarding attention deficit hyperactivity disorder. *Iranian J Pediatr* 2017; 27:e3834.
20. Ohan JL, Cormier N, Hepp SL, et al. Does knowledge about attention-deficit/hyperactivity disorder impact teachers' reported behaviors and perceptions? *School Psychol Quar* 2008; 23:436-439.
21. Sarraf N, Karahmadi M, Marasy MR, et al. A comparative study of the effectiveness of nonattendance and workshop education of primary school teachers on their knowledge, attitude and function towards ADHD students in Isfahan in 2010. *J Res Med Sci* 2011; 16:1196-1201.
22. Muanprasart P, Traivaree C, Arunyanart W, et al. Knowledge of attention deficit hyperactivity disorder and its associated factors among teachers in 3 large primary schools in Phra Nakorn Sri Ayutthaya Province, Thailand. *J Med Assoc Thailand* 2014; 97:107-114.
23. Youssef MK, Hutchinson G, Youssef FF. Knowledge of and attitudes toward ADHD among teachers: Insights from a Caribbean nation. *SAGE Open* 2015; 5.
24. West J, Taylor M, Houghton S, et al. A comparison of teachers' and parents' knowledge and beliefs about attention-deficit/hyperactivity disorder (ADHD). *Sch Psychol Int* 2005; 26:192-208.
25. Canu WH, Mancil EB. An examination of teacher trainees' knowledge of attention-deficit/hyperactivity disorder. *Sch Mental Health* 2012; 4:105-114.
26. Rodrigo MD, Perera D, Eranga VP, et al. The knowledge

- and attitude of primary school teachers in Sri Lanka towards childhood attention deficit hyperactivity disorder. *Ceylon Med J* 2011; 56:51-54.
27. Yoo IY, Ra J, Oh E, et al. Knowledge and attitude to attention deficit hyperactive disorder in Korean preschool teachers. *J Korean Academy Child Health Nurs* 2009; 15:383.
28. Anderson DL, Watt SE, Noble W, et al. Knowledge of attention deficit hyperactivity disorder (ADHD) and attitudes toward teaching children with ADHD: The role of teaching experience. *Psychol Sch* 2012; 49:511-525.
29. Timoštšuk I. Coping of trainee-teachers in influencing pupils' study environment. Educational environment in early childhood in Estonia and Finland. IV. Collection of Articles 2009; 75-85.
30. Scututto MJ, Terjesen MD, Frank AS. Teachers' knowledge and misperceptions of attention-deficit/hyperactivity disorder. *Psychol Sch* 2000; 37:115-122.
31. Conners CK, Epstein JN, March JS, et al. Multimodal treatment of ADHD in the MTA: An alternative outcome analysis. *J Am Acad Child Adolesc Psychiatry* 2001; 40:159-167.
32. DuPaul GJ, Eckert TL. The effects of school-based interventions for attention deficit hyperactivity disorder: A meta-analysis. *Sch Psychol Rev* 1997; 26:5-27.
33. Anhalt K, McNeil CB, Bahl AB. The ADHD classroom kit: A whole-classroom approach for managing disruptive behavior. *Psychol Sch* 1998; 35:67-79.
34. Mulholland SM, Cumming TM, Jung JY. Teacher attitudes towards students who exhibit ADHD-type behaviours. *Australasian J Spec Edu* 2014; 39:15-36.
35. Honkasilta J, Sandberg E, Närhi V, et al. ADHD in the context of Finnish basic education. *Emot Behav Difficulties* 2014; 19:311-323.
36. Kauffman JM, Lloyd JW, McGee KA. Adaptive and maladaptive behavior: Teachers' attitudes and their technical assistance needs. *J Spec Educ* 1989; 23:185-200.