Research article
Ερευνητική εργασία

Greek teachers' knowledge about attention deficit hyperactivity disorder

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Attention deficit hyperactivity disorder (ADHD) is a neurobiological disorder, which affects about 5.2% of school-aged children worldwide. Children with ADHD present teachers with a special challenge, since they interfere with teaching process and do not respond to typical classroom management techniques. In order to meet this challenge teachers must have accurate, up-to-date, information about the disorder so that they can respond to the needs of the student with ADHD. Studies that have examined teachers' beliefs and knowledge relating to ADHD highlighted the need for providing training to increase Greek teachers' knowledge and understanding of the disorder. Thus, the aims of the present study were: (a) to develop and evaluate brief ADHD training seminar for teachers; and (b) to investigate whether the training format (half-day versus two-day seminar) would have a differential effect on teachers' knowledge about ADHD. A total of 143 teachers formed the two sample groups; Group 1 (n=68) attended a half-day training (5 hours), and Group 2 (n=75) a two-day training (18 hours). Seminar topics included: (a) gaining basic knowledge about the symptoms, causes and natural history of ADHD, (b) understanding the key underlying cognitive deficits of the disorder and their impact on learning and behavior, (c) implementation of specific learning strategies for children with ADHD, (d) benefits and limitations of existing treatment approaches including the pharmacological treatment, and (e) available instruments for teachers that could inform their decision to refer the student to CAMHS for an assessment. A self-report ADHD Knowledge Questionnaire (ADHD-KQ), which covers four domains (clinical presentation, causes, cognitive deficits, interventions) was developed for the purpose of the present study, and was administered pre- and post-seminar. Teachers were generally knowledgeable about clinical presentation of ADHD, with more than 80% of the sample responding correctly to items pertaining to core symptoms. The internal consistency of the total ADHD-KQ scale measured by Cronbach's alpha coefficient was found to be good (0.89). The alpha coefficients for the sub-scales were acceptable (0.70 for the Symptoms/Diagnosis sub-scale, 0.73 for the Cognitive Deficits sub-scale, and 0.75 for the Intervention sub-scale), except for the Causes sub-scale, which was poor (0.59). In addition, each of the sub-scales showed a significant correlation with the total scales score (range r=0.66 to r=0.79), and there also was significant cor-

relation between the four sub-scales (range r=0.39 to r=0.45). As expected, gaps in knowledge were identified, particularly in the area of causes, pharmacological treatment and cognitive deficits associated with ADHD. The results, using paired samples t tests, showed a highly significant increase in ADHD-KQ total and all sub-scale scores in both groups ($p<0.001$), indicating an overall improved knowledge about ADHD irrespective of the training format, i.e. half-day versus two-day training seminar. One-way MANOVA revealed significant difference between the two training seminars in mean pre-post difference sub-scale scores considered simultaneously. Subsequent univariate tests of between-subjects effects revealed that the group (training format) had a statistically significant effect on ADHD knowledge of symptoms sub-scale only [$F(1,141)=10.46$, $p<0.01$], with those who participated in the two-day training seminar having significantly higher mean pre-post difference scores as compared to teachers who attended the half-day training seminar ($p<0.01$). The present findings merit replication and, if confirmed in larger samples, have important implications for undergraduate curriculum development and training of practicing teachers, so that to overcome specific knowledge gaps and misconceptions with regards to ADHD. Future study should incorporate the use of classroom interventions and teaching strategies for students with ADHD, before and after brief training seminar, for a more thorough evaluation of its effectiveness.

Key words: Attention deficit hyperactivity disorder, teachers, knowledge, training seminar.

Introduction

Attention deficit hyperactivity disorder (ADHD) is a commonly diagnosed neurobiological disorder in childhood, which affects about 5.2% of children worldwide.[1] More recent reviews[2,3] suggest even higher prevalence rate, ranging between 5.9 and 7.2%. A study[4] looking at the prevalence of ADHD in Greece indicated a rate 6% (8% for boys and 3.8% for girls) among primary school children, and concluded that the disorder was associated with impairment in social and educational functioning.

The question surrounding ADHD as a legitimate disorder has been a subject of controversy among child psychiatrists in Greece until the 90's, mainly due to prevailing influence of psychoanalytic thinking and psychodynamic model in clinical practice, placing importance on psychogenic factors in understanding and treating ADHD. The entry of the slow release methylphenidate (Concerta), and soon after atomoxetine, into the Greek market in 2005 shifted the change in conceptualization of the ADHD from a psychological to a neurobehavioural disorder, emphasizing the contribution of genetic, biological, cognitive but also environmental factors. Its wide impact on child's development, and in particular its interference with learning process, led the Greek Ministry of Education, in 2008, to include ADHD in the category of learning disorders with special educational needs.[5]

Children with ADHD present teachers with a special challenge. ADHD interferes with teaching process, typically affects school performance or disrupts the rest of the class, and does not respond to typical classroom management techniques. In order to meet this challenge teachers must have accurate, up-to-date, information about the disorder so that they can respond to the needs of the student with ADHD.[6] Teachers' factual knowledge about ADHD is extremely important for recognizing the disorder, as they are often the first ones to suspect it.

Only a few studies up to date have examined teachers' beliefs and knowledge relating to general issues of identification, diagnostic criteria, and treatment of students with ADHD in Greece. A study conducted by Kakouros et al[7] regarding teachers' beliefs about ADHD, using a case vignette, concluded the need for in service training for teachers regarding the disorder; teachers viewed the typical ADHD behaviours as a result of child's difficult temperament, inadequate parenting (e.g. neglect) or family dysfunction (e.g. divorce), and failed to recognize the importance of neurobiological factors and teaching environment

in the aetiology and outcome of the disorder respectively. A more recent study on Greek primary school teacher's knowledge about ADHD revealed that they were well informed about the symptoms of the disorder but lacked knowledge about causes and management of the ADHD.[8] Both studies highlighted the need for providing training to increase Greek teachers' knowledge and understanding of ADHD.

A thorough review of literature showed that no studies of teachers' training programs regarding ADHD in Greece have been published. Thus, the aims of the present study were: (a) to develop and evaluate an ADHD brief training seminar for teachers, and (b) to investigate whether the format of the training would have a differential effect on teachers' knowledge about ADHD.

Method

Participants

A total of 143 teachers, who attended an educational seminar on ADHD, formed the two sample groups, which were recruited using convenience sampling. The first sample (Group 1) consisted of 68 practicing nursery- and primary-school teachers (grade 0 to grade 6) working in state schools in the Piraeus Primary Education District, whereas the second sample (Group 2) comprised 75 teachers who attended a postgraduate training course in special education, provided by the University of Aegean, and were engaged in informal teaching activity (private tuition). Both groups attended an educational seminar on ADHD; the Group 1 a half-day (5 hours) training, and the Group 2 a two-day (18 hours) training. The demographic characteristics of the sample are presented in table 1.

Table 1. Demographic characteristics of the sample.

Variable	Group 1 (n=68)	Group 2 (n=75)
Gender (% female)	85.3%	85.5%
Age Group		
22–30 years old	56.6%	7.4%
31–40 years old	43.4%	23.5%
>41 years old	–	66.6%
Marital status		
Not Married	71.1%	26.5%
Married	27.6%	67.6%
Divorced	1.3%	5.9%
Having Children	18.4%	70.6%
Years of teaching experience: Mean (SD)	4.4 (3.5)	16.1 (7.4)
Teacher level		
Nursery teacher	32.4%	–
Primary school teacher	67.6%	56.6%
Secondary school teacher	–	43.4%
Post-graduate education	8.8%	
Master	10.3%	27.6%
Postgraduate seminars/ courses in ADHD		6.6%

Procedure

The educational seminar for teachers was designed, drawing from the Teach ADHD training program developed by Martinussen et al,[9] with the following aims: (a) to gain basic knowledge about the symptoms, causes and natural history of ADHD, (b) to gain a basic understanding of the key underlying cognitive deficits in ADHD and their impact on learning and behaviour (common school difficulties associated with ADHD), (c) to highlight strategies for teachers to help their students with ADHD be successful in school, (d) to gain understanding of the benefits and limitations of existing treatment approaches, including the pharmacological treatment, and (e) to become aware of existing screening instruments for teachers in Greece that could inform their decision to refer the student to CAMHS for an assessment. The two-day contrary to the half-day seminar, allowed for practicing case vignettes in small groups, whereby behaviour techniques and teaching strategies in some real-life situations were addressed more in depth. The first two authors were the main facilitators of the seminar.

Measures

A self-report ADHD Knowledge Questionnaire (ADHD-KQ), was developed for the purpose of the present study, drawing on from existing instruments assessing teachers' knowledge with regards to

ADHD[10,11] and taking into account cultural prevailing views on the disorder. It comprised two sections. The first contained multiple choice questions on demographic background (e.g. age, gender, qualifications), teacher level (nursery, primary, secondary), years of teaching experience, and prior attendance of a seminar or postgraduate course in special education. The second section included 29 items evaluating participants' knowledge of ADHD, with a three option (True/False/I don't know) response format. Correct answers receive 1 point and incorrect ones 0 points. So the range of possible scores goes from 0, the lowest level of knowledge, to 29, for the highest. The response "I don't know" is not included in calculation of the total score. The three option response format is chosen to overcome the limits of the dichotomous format (True/False) as it allows discerning those areas in which teachers have more knowledge, areas where they have the least knowledge and the areas in which they commit the greatest number of errors. The items were grouped into four sub-scale domains: Symptoms/Diagnosis of ADHD (8 items), Causes of ADHD (6 items), Cognitive deficits/Learning (7 items), Interventions/Treatment of ADHD (8 items). Panel of 12 experts in ADHD were asked to assign each item to one of the sub-scales provided by the authors. An item was considered as belonging to a particular sub-scale if at least 75% of the group was in agreement with the decision.

The internal consistency of the total ADHD-KQ scale measured by Cronbach's alpha coefficient was found to be good (0.89). The alpha coefficients for the sub-scales were acceptable (0.70 for the Symptoms/Diagnosis sub-scale, 0.73 for the Cognitive Deficits sub-scale, and 0.75 for the Intervention sub-scale), except for the Causes sub-scale, which was poor (0.59). In addition, each of the sub-scales showed a significant correlation with the total scales score (range r=0.66 to r=0.79), and there also was significant correlation between the four sub-scales (range r=0.39 to r=0.45). A significant difference found in teacher knowledge of ADHD (ADHD-KQ total score), between those who had attended courses in special education, as compared with those who either had a basic degree or a postgraduate degree, confirms the validity of the scale (Kruskall-Wallis chi-square= 23.13, p<0.001).

The ADHD-KQ was administered before and following the seminar in order to determine the improvement in knowledge of ADHD as a result of the training.

Results

Mean scores on the 29-item ADHD-KQ administered pre- and post-seminar are presented in table 2. The mean percentage of correct answers on ADHD-KQ was 55.9% and 52.1% for the Groups 1 and 2 respectively, whereas the mean percentage of "don't know" responses, indicating lack of knowledge, was 24.7% for the Group 1, and 31.8% for the Group 2. Tables 3 and 4 display the percentage of correct and "don't know" answers, respectively, on ADHD-KQ individual items.

Pre- and post-seminar scores on ADHD-KQ were compared, using paired samples t test, for each group separately. We found the difference of mean

Table 2. Participants mean scores by group and time.

	Pre-seminar		Post-seminar	
	Group 1 Mean±SE	Group 2 Mean±SE	Group 1 Mean±SE	Group 2 Mean±SE
Teacher ADHD-KQ total	16.1±0.59	15.9±0.55	23.1±0.32	23.9±0.33
Symptoms/Diagnosis sub-scale	5.2±0.19	4.4±0.21	6.5±0.13	6.7±0.13
Causation sub-scale	1.9±0.14	2.0±0.13	3.6±0.10	3.4±0.08
Cognitive/Learning sub-scale	4.1±0.23	4.3±0.21	6.5±0.16	6.8±0.14
Management sub-scale	5.7±0.21	5.7±0.20	7.0±0.14	7.0±0.14

Notes: Group 1 (n=68), Group 2 (n=75)

Table 3. Teacher ADHD-KQ items with >80% of correct answers.

Category		Group 1 (n=68)	Group 2 (n=75)
Q1. Children with ADHD present with hyperactivity, impulsivity and distractibility	Symptoms/diagnosis	90.8	97.1
Q4. Children with ADHD have good social skills	Symptoms/diagnosis	55.3	82.4
Q9. Students with ADHD can follow the instructions and organize complex tasks if they really want to	Cognitive	61.8	82.4
Q19. ADHD is a short-term disorder that gets better with time and doesn't require any intervention	Symptoms/diagnosis	67.1	80.9
Q27. Students with ADHD require the same teaching strategies as other students	Management	82.8	83.8
Q29. The teacher's role is limited in helping a student with ADHD	Management	88.2	94.1

score of 6.96±4.83 for the Group 1, and of 7.91±4.94 for the Group 2, which were statistically highly significant ($p<0.001$). Similar changes were seen across all ADHD-KQ sub-scales, indicating significantly improved ($p<0.001$) teacher's knowledge of ADHD in all domains (see table 5). In order to ascertain, whether the training format (half-day as opposed to two-day seminar) produced greater knowledge increase, a one-way MANOVA was used, with the group as a between subjects factor and the mean pre-post difference sub-scale scores as a within subjects factor. Wilk's lamda of 0.888 [$F(4,138)=4.37$, $p<0.01$] indicated significant difference between the two training seminars in mean pre-post difference sub-scale scores considered simultaneously. Subsequent univariate tests of between-subjects effects revealed

Table 4. Teacher ADHD-KQ statements with >33% indicating lack of knowledge (Don't know).

Category	Group 1 (n=68)	Group 2 (n=75)
Q11. Pharmacological treatment sedates children with ADHD and makes them more obedient	31.6	48.5
Q12. A child who concentrates on tasks of his choice, e.g. computer cannot have ADHD	34.2	34.2
Q13. Pharmacological treatment has no effects for ADHD symptoms	39.5	50
Q17. Child who doesn't show hyperactivity does not qualify for ADHD diagnosis	35.5	35.3
Q18. ADHD is an exclusively genetic disorder	39.5	36.8
Q20. Learning difficulties are due to child's limited capacity to encode and retain information information in their memory	30.3	39.7
Q21. Sugar or/and additives intake is responsible for the disorder	38.2	51.5
Q23. ADHD symptoms are secondary to generalized or specific learning (e.g. dyslexia) disability or conduct problems, thereof the diagnosis of ADHD does not apply	35.8	38.2

Table 5. Repeated measures t test comparing teacher's scores before and after seminar.

	t-test	df	p	Mean difference±SE	95% CI of the difference
Group 1					
Teacher ADHD-KQ total	11.869	67	000	6.96±0.89	5.7861–8.1257
Symptoms/Diagnosis sub-scale	6.679	67	000	1.32±0.20	0.9280–1.7190
Causation sub-scale	7.580	67	000	1.12±0.15	0.8233–1.4120
Cognitive/Learning sub-scale	9.283	67	000	2.46±0.26	1.9278–2.9839
Management sub-scale	8.309	67	000	1.59±0.19	1.2067–1.9698
Group 2					
Teacher ADHD-KQ total	13.852	74	000	7.91±0.57	6.7693–9.0440
Symptoms/Diagnosis sub-scale	10.162	74	000	2.31±0.23	1.8544–2.7589
Causation sub-scale	9.836	74	000	1.31±0.13	1.0420–1.5714
Cognitive/Learning sub-scale	10.141	74	000	2.52±0.25	2.0249–3.0151
Management sub-scale	5.822	74	000	1.27±0.22	0.8332–1.7001

that the group (training format) had a statistically significant effect on ADHD knowledge of symptoms sub-scale only [$F(1,141)=10.46$, $p<0.01$], with those who participated in the two-day training seminar having significantly higher mean pre-post difference scores as compared to teachers who attended the half-day training seminar ($p<0.01$).

Discussion

The results of the present study corroborated findings from previous studies worldwide.[10,12–15] The percentage of correct responses was found to be just above 50% as compared to a range of 76% in some studies[14] to less than 50% in other studies.[15] Overall teachers were generally knowledgeable about the "hallmark" symptoms of ADHD, with more than 80% of the sample responding correctly to items pertaining to core symptoms of ADHD. As expected, gaps in knowledge and misconceptions were identified, particularly in the area of causes, pharmacological treatment and cognitive deficits associated with ADHD.

The training seminar, irrespectively of its format (half- or two-day training seminar), was associated with an improved knowledge and awareness of symptoms, causes, cognitive deficits and pharmacological treatment of ADHD. However, the two-day training seminar produced greater knowledge increase of ADHD clinical presentation. The latter finding might be explicable in view of the participants having had the opportunity to practice case vignettes in small groups.

Despite these rather encouraging results, the study is not without its limitations. The small sample size, the heterogeneous nature of it (e.g. wide age range and different level of teaching experience), lack of a control group and follow up compromise the conclusions about the effectiveness of the brief training seminars. The present findings merit replication and, if confirmed in larger samples, have important implications for undergraduate curriculum development and training of practicing teachers, so that to overcome specific knowledge gaps with regards to ADHD. Such an improvement in knowledge could lead to an increased rate of recognition of children with ADHD and use of appropriate teaching and behaviour management strategies within the classroom. Future study evaluating effectiveness of brief training seminars should incorporate measures regarding the pattern of referral to CAMHS by the teachers for ADHD evaluation and the use of classroom interventions and teaching strategies for students with ADHD, before and after.

Γνώσεις Ελλήνων εκπαιδευτικών σχετικά με τη διαταραχή ελλειμματικής προσοχής και υπερκινητικότητας

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Η διαταραχή ελλειμματικής προσοχής και υπερκινητικότητας (ΔΕΠΥ) είναι μια νευροβιολογική διαταραχή που επηρεάζει περίπου το 5,2% των παιδιών σχολικής ηλικίας παγκοσμίως. Οι μαθητές με ΔΕΠΥ αποτελούν πρόκληση για τους εκπαιδευτικούς καθώς παρεμποδίζουν τη μαθησιακή διαδικασία, αποδιοργανώνουν με τις συμπεριφορές τους την ομαλή λειτουργία της τάξης και δεν ανταποκρίνονται στις συνήθεις διδακτικές προσεγγίσεις και στρατηγικές διαχείρισης δύσκολων συμπεριφορών μέσα στην τάξη. Προκειμένου οι εκπαιδευτικοί να ανταποκριθούν σε αυτήν την πρόκληση πρέπει να έχουν ακριβή πληροφόρηση για τη διαταραχή, βασισμένη σε σύγχρονα επιστημονικά δεδομένα, η οποία θα τους βοηθήσει να κατανοήσουν καλύτερα τις ανάγκες ενός μαθητή με ΔΕΠΥ και να αποκτήσουν επιδεξιότητα στην αντιμετώπιση αυτών. Οι μελέτες που έχουν διερευνήσει τις αντιλήψεις και τις γνώσεις των εκπαιδευτικών για τη ΔΕΠΥ στην Ελλάδα έχουν επισημάνει την ανάγκη για επιμόρφωση των δασκάλων σε θέματα που αφορούν στη διαταραχή και τις δυσκολίες που απορρέουν από αυτήν. Σκοπός της παρούσας πιλοτικής μελέτης ήταν: (α) η κατάρτιση και αξιολόγηση εκπαιδευτικού σεμιναρίου για δασκάλους σχετικά με τη ΔΕΠΥ, και (β) η συγκριτική διερεύνηση της αποτελεσματικότητας ενός σύντομου (5ωρου) έναντι διήμερου (18 ωρών) σεμιναρίου στην αύξηση της γνώσης των δασκάλων για τη ΔΕΠΥ. Συνολικά 143 εκπαιδευτικοί συμμετείχαν στο πρόγραμμα: Ομάδα 1 (n=68) παρακολούθησε 5ωρο σεμινάριο (μισή ημέρα), ενώ η Ομάδα 2 (n=75) παρακολούθησε 18ωρο (διήμερο) σεμινάριο για τη ΔΕΠΥ. Η θεματολογία του περιελάμβανε: (α) βασικές γνώσεις σχετικά με τη φύση των συμπτωμάτων ΔΕΠΥ και την πορεία τους στον χρόνο, καθώς και τα αίτια της διαταραχής, (β) κατανόηση των βασικών γνωστικών ελλειμμάτων που σχετίζονται με τη ΔΕΠΥ και την επίδρασή τους στη μάθηση και τη συμπεριφορά, (γ) εφαρμογή ειδικών διδακτικών προσεγγίσεων για τα παιδιά με ΔΕΠΥ, (δ) τα οφέλη και τους περιορισμούς των διαθέσιμων θεραπευτικών παρεμβάσεων συμπεριλαμβανομένης της φαρμακευτικής αγωγής, (ε) διαθέσιμες κλίμακες στους εκπαιδευτικούς για την εντόπιση μαθητών με πιθανή ΔΕΠΥ. Για τους σκοπούς της παρούσας έρευνας κατασκευάστηκε Ερωτηματολόγιο Γνώσης για τη ΔΕΠΥ (ADHD-KQ), το οποίο καλύπτει τέσσερεις τομείς (κλινική εικόνα, αίτια, γνωστικά ελλείμματα, παρεμβάσεις). Η αξιοπιστία εσωτερικής συνοχής της συνολικής κλίμακας ADHD-KQ με συντελεστή Cronbach's alpha coefficient ήταν ικανοποιητική (0,89), ενώ των υποκλιμάκων αποδεκτή (0,70 για την κλινική εικόνα, 0,73 για τα γνωστικά ελλείμματα, 0,75 για τις παρεμβάσεις) με εξαίρεση την υποκλίμακα για τα αίτια (0,59). Η συσχέτιση της κάθε υποκλίμακας με τη συνολική κλίμακα ήταν στατιστικά σημαντική και κυμαινόταν από r=0,66 μέχρι r=0,79, ενώ οι συσχετίσεις μεταξύ των τεσσάρων υποκλιμάκων ήταν επίσης στατιστικά σημαντικές (από r=0,39 έως r=0,45). Οι συμμετέχοντες συμπλήρωσαν το ερωτηματολόγιο πριν και μετά τη λήξη του σεμιναρίου. Σύμφωνα με τα αποτελέσματα, πριν την έναρξη του σεμιναρίου, η συντριπτική πλειοψηφία του δείγματος (>80%) διέθετε καλή γνώση των βασικών συμπτωμάτων της ΔΕΠΥ. Ωστόσο, η πληροφόρησή τους σχετικά με τα αίτια, τα γνωστικά ελλείμματα και τις παρεμβάσεις, ειδικότερα τη φαρμακευτική αγωγή, ήταν ελλιπής. Σύμφωνα με τα αποτελέσματα που προέκυψαν από τη δοκιμασία paired samples t test, και οι δύο ομάδες εμφάνισαν σε όλες τις υποκλίμακες του ADHD-KQ στατιστικά σημαντικά υψηλότερη βαθμολογία μετά τη λήξη του σεμιναρίου (p<0,001). Η πολυπαραγοντική ανάλυση one-way MANOVA της μεταβολής της βαθμολογίας μετά τη λήξη του σεμιναρίου στις υποκλίμακες του

ADHD-KQ, μεταξύ των δύο ομάδων, έδειξε μεγαλύτερη αύξηση της μεταβολής της βαθμολογίας στην υποκλίμακα που καλύπτει την κλινική εικόνα της ΔΕΠΥ στην ομάδα που συμμετείχε στο διήμερο σεμινάριο [F(1,141)=10,46, p<0,01]. Η επιβεβαίωση των αποτελεσμάτων της παρούσας πιλοτικής εφαρμογής του εκπαιδευτικού προγράμματος για τη ΔΕΠΥ σε μεγαλύτερα δείγματα εκπαιδευτικών θα επέτρεπε την ενσωμάτωσή του κατά τη διάρκεια των προπτυχιακών σπουδών (διήμερο σεμινάριο), αλλά και στα προγράμματα συνεχιζόμενης κατάρτισης των εν ενεργεία εκπαιδευτικών (5ωρο σεμινάριο), με στόχο την κάλυψη των κενών γνώσης και την αποκατάσταση των λανθασμένων αντιλήψεων σχετικά με τη ΔΕΠΥ.

Λέξεις ευρετηρίου: Διαταραχή ελλειμματικής προσοχής υπερκινητικότητας, δάσκαλοι, γνώση, εκπαιδευτικό σεμινάριο.

References

1. Polanczyk G, de Lima MS, Horta BL, Biederman J, Rohde LA. The worldwide prevalence of ADHD: A systematic review and metaregression analysis. *Am J Psychiatry* 2007, 164:942–948, doi: 10.1176/ajp.2007.164.6.942
2. Willcutt EG. The prevalence of DSM-IV attention-deficit/hyperactivity disorder: A meta-analytic review. *Neurotherapeutics* 2012, 9:490–499, doi: 10.1007/s13311-012-0135-8
3. Thomas R, Doust J, Sanders S, Glasziou P. *Worldwide prevalence of attention-deficit hyperactivity disorder: a systematic review*. Paper presented at preventing overdiagnosis conference, 10–12 September 2013, Darmouth USA
4. Skounti M, Giannoukas S, Dimitriou E, Nikolopoulou S, Linardakis E, Philalithis A. Prevalence of attention deficit hyperactivity disorder in schoolchildren in Athens, Greece. Association of ADHD subtypes with social and academic impairment. ADHD: *Atten Hyperact Disord* 2010, 2:127–132, doi: 10.1007/s12402-010-0029-8
5. Greek Government Gazette. Law 3699/2008. Special education of disabled or special education needs persons -GGG 199/A'/2.10.2008:3499–3522
6. Brock SE, Jimerson SR, Harsen. *Identifying, assessing and treating ADHD at school*. Springer, New York, 2009
7. Kakouros E, Papaeliou C, Badikian M. Teachers' perceptions about nature and treatment of attention deficit hyperactivity disorder. *Pedagogical Inspection* 2006, 41:117–130
8. Antonopoulou A, Staboltzi A, Kouvava S. Teacher's knowledge regarding ADHD. *Pedagogic Subjects Inspection,* 2010:162–178
9. Martinussen R, Tannock, R, McInnes A, Chaban, P. *Teach for Success. Manual for teachers on ADHD*. Toronto. The Hospital for Sick Children, 2005
10. Jerome L, Washington P, Laine CJ, Segal A. Graduating teachers' knowledge and attitudes about attention-deficit hyperactivity disorder: A comparison with practicing teachers. *Can J Psychiatry* 1999, 44:192, PMID: 10097848
11. Sciutto MJ, Terjesen MD, Bender Frank AS. Teachers' knowledge and misperceptions of attention deficit/hyperactivity disorder. *Psychol Schs* 2000, 37:115–122, doi: 10.1002/(SICI)1520-6807(200003)37:2<115: AID-PITS3>3.0.CO;2-5
12. Jerome L, Gordon M, Hustler P. A comparison of American and Canadian teachers' knowledge and attitudes towards attention deficit hyperactivity disorder (ADHD). *Can J Psychiatry* 1994, 39:563–567, PMID: 7874659
13. Kos JM, Richdale AL, Jackson MS. Knowledge about attention-deficit/hyperactivity disorder: A comparison of in-service and pre-service teachers. *Psychol Schs* 2004, 41:517–526, doi: 10.1002/pits.10178
14. Ohan JL, Cormier N, Hepp SL, Visser TAW, Strain MC. Does knowledge about attention deficit/hyperactivity disorder impact teachers' reported behaviors and perceptions? *Sch Psychol Q* 2008, 23:436–449, doi: 10.1037/1045-3830.23.3.436
15. Weyandt LL, Fulton KM, Schepman SB, Verdi GR, Wilson KG. Assessment of teacher and school psychologist knowledge of attention-deficit/hyperactivity disorder. *Psychol Schs* 2009, 46:951–961, doi :10.1002/pits.20436

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