

Original Research Article

ADHD in the classroom – measuring opinions and needs

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Abstract

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Collaboration between school teachers and health systems is essential for efficient diagnosis, management, and treatment of children with Attention Deficit Hyperactivity Disorder (ADHD). This study evaluated teachers' knowledge, perceptions, and needs regarding the teacher-physician working relationship and perceived barriers for collaboration. A specifically designed questionnaire was fulfilled by 430 teachers in 30 elementary schools, representing a broad range of socio-demographic areas. Findings point to an alarming lack of communication between teachers and medical specialists. Most teachers were not involved in the diagnosis procedure and reported that children's treatment was compromised due to lack of collaboration between the health and education systems. Most of them recognized their need for better training and guidance regarding common neuro-developmental disorders. The results of this study are valuable to identify areas where there is a lack of knowledge among teachers and need for further training.

Key words: ADHD, Attitudes, Collaboration, Knowledge, Teachers

INTRODUCTION

Attention deficit hyperactivity disorder (ADHD) is the most common neurobehavioral disorder in childhood (Skounti et al., 2007). ADHD has a prevalence rate of 5% - 9% among school-age children [American Academy of Pediatrics (AAP), 2004; American Psychiatric Association (APA), 2013; Polanczyk et al., 2007], applying that at least one child with ADHD is present in every classroom in every school (Barkley, 1990; Kleynhans, 2005). ADHD has a significant impact on the development of affected children, and carries long-term implications such as learning difficulties, academic underachievement, expulsion from school, and school refusal (Willoughby, 2003). Despite strong evidence for the effectiveness of early identification and intervention (Greenhill et al., 2006; Marks et al., 2009), the implementation of diagnosis and treatment programs for children with ADHD in community settings, such as primary care providers (Rushton et al.,

2004; Stevens, 2005) and schools (Sayal et al. 2012), is clearly insufficient. It is estimated that only 28-50% of the children with ADHD are treated by a pediatric or adolescent specialist (Sayal et al., 2010). Of them, many receive psychostimulants with limited efficacy and there is likely to be considerable local variation in access to non-pharmacological interventions (Epstein et al. 2010; Scheffler et al. 2009).

In order to address these concerns, the AAP published several recommendations for the diagnosis and treatment of ADHD in the community (AAP, 2000). These guidelines highlight the importance of collaboration between family, school, and health systems in the diagnosis and treatment planning for ADHD children. Specifically, they address the need of primary care clinicians to collect teacher standardized rating scales in the diagnosis process of ADHD and to collaborate with

schools in improving teachers' recognition of ADHD.

The guidelines rely on the Diagnostic and Statistical Manual of Mental Disorders' criteria (DSM-5; APA, 2013) that ADHD symptoms would be present in two or more settings (e.g. at school and at home), affirming the critical role of teachers' information in diagnosis and treatment of ADHD. The manual also emphasizes that: 'Confirmation of substantial symptoms across settings typically cannot be done accurately without consulting informants who have seen the individual in those settings' (DSM-5; APA, 2013, pp 61).

Teachers play a critical role in ADHD care for a number of reasons. First, ADHD symptoms are more prominent in concentration-demanding situations like school (Kos et al., 2006), making communication with teachers essential for the diagnosis of ADHD (Carey, 1999; Wolraich et al., 2003). In many cases, the teacher is also the first person to suggest a possible diagnosis of ADHD and to make a referral for ADHD assessment (Lawson, 2004; Snider et al., 2003; Stroh et al., 2008). A comparison of general practitioners (GPs) versus teacher knowledge of ADHD in the UK showed that knowledge about the disorder was actually greater among teachers than among GPs (Kirby et al., 2005). Second, teachers hold valuable information about the efficacy of pharmacological treatment. Because many children receive medication only during the school day, it is likely that teachers are those who directly observe behavioral change in medicated children (Pelham and Fabiano, 2008). This information could be vital in determining the child's responsiveness to the medication and minimizing the side effects of the medication. Findings from the Multimodal Treatment Study of Children with ADHD suggest that tightly titrated medication use, requiring close communication between the prescribing clinician and the child's teacher, yields improved outcomes over standard community care (MTA Cooperative Group 1999). Third, teachers have large influence on parental decisions to seek mental health consultations for their children. They are seen as a source of advice or reassurance about mental health issues and in some cases parents would prefer to consult them before (or even instead) the physician (Ford et al., 2005; Sayal et al., 2006). Finally, teachers are often responsible for implementing and evaluating interventions for ADHD in the classroom (Ohan et al., 2008; Vereb and DiPerna 2004). Solid evidence supports the effectiveness of highly structured behavioral management strategies implemented by school staff in addressing many of the common areas of dysfunction present in children with ADHD (Corkum et al., 2005; Pelham et al., 1998). Moreover, psychosocial interventions implemented in the home and school settings either alone or in combination with stimulants therapy, were found to be effective in reducing ADHD symptoms (Jensen et al., 2001).

Teachers' knowledge and attitudes regarding ADHD

are likely to influence their roles and the subsequent behavioral and learning outcomes for children (Sherman et al., 2008). For example, it has been suggested that teachers who lack knowledge about ADHD may overlook behaviors signifying a child in need of assistance (Ohan et al., 2008) or provide unreliable information to medical practitioners about the effects of medication (Kasten and Heron, 1992). In contrast, overall knowledge of ADHD was found to be positively related to teachers' ability, willingness, and confidence in teaching a child with ADHD (Goldstein et al., 2011; Reid et al., 1994; Sciotto et al., 2000). Thus, it is crucial for teachers to be capable of recognizing the characteristics of ADHD and of implementing interventions.

However, studies found that teachers have limited knowledge about ADHD and that they tend to have substantial misperceptions about its nature, course, causes and outcomes (Alkahtani, 2013; Weyandt et al., 2009). Surveys conducted among teachers in the last 20 years repeatedly found that although teachers are generally knowledgeable about the symptoms and the diagnosis of ADHD, they still have little information about long-term aspects of ADHD and its treatment (Guerra and Brown, 2012; Hawkins et al., 1991; Jerome et al., 1994). For example, Ghanizadeh et al. (2006) investigated the knowledge and attitudes about ADHD among elementary school teachers in Iran. Their results showed that teachers held false beliefs about causation of ADHD, with 53.1% of the participating teachers attributing the disorder to 'parental spoiling' and one third attributed it to excessive consumption of sugar. Of particular concern was the perception of 39.8% of the teachers that the educational achievement of children with ADHD would ultimately be lower than children without ADHD.

Most surveys that measure teachers' knowledge of ADHD are based on either Jerome et al. (1994) 20-item untitled scale or Sciotto et al. (2000) 36-item Knowledge of Attention Deficit Disorders Scale (Anderson et al., 2012). These scales are focused on knowledge about symptoms, the etiology of ADHD, and different approaches to treatment of ADHD (medication and behavior management). However, very little is known about teachers' knowledge, attitudes and needs in the area of collaboration with health-care providers. Although the need for multi-disciplinary, multi-agency input into the diagnosis and management of ADHD is clear, research suggests that in many cases the collaboration between teachers and health care providers is unsatisfactory (Louw, 2009; Perold et al., 2010; Schlozman and Schlozman, 2000). For example, an American national survey of 2000 primary care pediatricians found that one-fifth to one third of physicians do not routinely incorporate teacher and school information into the evaluation process (Chan et al., 2005). Likewise, Perold et al. (2010) reported that two thirds of the teachers in

their sample (n=552) were never involved in assessing the use of stimulant medication. The communication between these sectors is probably hindered by many factors, including differences in cultures, languages, goals, diagnostic systems and schedules, lack of reimbursement for the time required for communication, confidentiality considerations, and limited resources of school and community (Barkley, 2002; Gomes and Solomon 2010; Sloan et al., 1999).

A closer working relationship between classroom teachers, psychologists and medical practitioners would be likely to enhance the diagnostic process and to improve the efficacy of medication management. The first step towards improving the current practice is to assess teachers' knowledge and needs in the context of collaborating with medical specialists.

The current study examined teachers' knowledge, perceptions, and needs regarding the assessment, management and treatment of children with symptoms of ADHD, as well as their perceived barriers to better collaboration with the health system.

Identifying teachers' perceptions can provide important data about the kinds of information teachers are lacking in this area so training programs can be re-evaluated. Perhaps most importantly, increasing the knowledge of school personnel about ADHD and its treatment may increase appropriate referrals for ADHD and better coordination of interventions among school personnel, physicians, and parents (Barbaresi and Olsen, 1998; Sayal et al. 2006).

METHODS

This is a descriptive design, which is based on self-reported questionnaire method. Descriptive research is a non-experimental investigation, in which the researcher describes a sample as a whole, defines variables, measures them, and computes descriptive statistics (Gall et al., 2007). This type of design, using self-report method, is considered an efficient method in collecting original data to measure teachers' knowledge about ADHD (Canu and Mancil, 2012; White et al., 2011).

Participants

In the first step, contact was made with school principals of all primary schools in Tel- Aviv district in Israel (children aged 6-12 years), including mainstream schools, integrative classes (special education class within mainstream school), and special education schools. School principals received the questionnaires accompanied by a cover letter. Questionnaires were delivered, collected, and sent back by the school secretary. All teachers of the school were asked to fill the

questionnaire. No monetary compensation was given for participation. Responses were anonymous. Informed consent was obtained from all individual participants included in the study.

Of the 600 distributed questionnaires, 430 teachers returned their completed questionnaires, which yielded a high response rate of 71.7%. This final amount was collected in a total number of 30 schools, representing a broad range of socio-demographic areas in the Tel Aviv district. The study was approved by the Chief Scientist of the Israeli Ministry of Education.

Instrument

A survey instrument was used to collect data from the participants to measure teachers' knowledge, needs, and perceptions about ADHD and their collaboration with health-care providers. The instrument was designed specifically for this study (Tables 1-3). The questionnaire was piloted with professional colleagues and a sample of 30 teachers, and then modified.

The questionnaire contained 37 questions, divided into four sections: (a) teaching experience, (b) personal experience in collaborating with medical specialists, (c) knowledge about the criteria and adequacy of training regarding referrals of children, and (d) beliefs and opinions about collaboration between teachers and medical specialists.

Teaching Experience-this section includes two items addressing the number of teaching years and type of school (main stream class, integrative, or special education).

Personal experience in collaborating with medical specialists -This section includes 15 items assessing the current nature of collaboration with the medical specialist. For example, do you generally receive a teacher's questionnaire from the medical specialist, have you initiated contact with the medical specialist regarding the referred children, have you participated in a child's visit to the medical specialist's office, and was the medical specialist compliant when you have contacted him/her. Three responses were optional: usually not, sometimes or usually yes.

Knowledge about the criteria and adequacy of training regarding referrals of children -this section includes five items that explore the teacher's knowledge about when to refer a child to a medical specialist (e.g., are you aware of guidelines for teachers regarding when to refer a child to a neuro-developmental/medical evaluation, do most teachers know when to refer a child to a medical specialist, etc.) and the need for additional training in this issue (e.g., is there a need to publish appropriate guidelines for teachers regarding when to refer a child to neuro-developmental/medical evaluation, do you recommend training for teachers regarding how to identify

Table 1. Participants' responses on items related to personal experience in collaborating with medical specialists (N=430)

Items	Usually not N (%)	Sometimes N (%)	Usually yes N (%)
Did you get a response letter from the medical specialist after the referral?	133 (31)	133 (31)	164 (38)
Did you get from the medical specialist a questionnaire to complete?	185 (43)	108 (25)	137 (32)
Did you initiate a contact with the medical specialist regarding children who were referred?	288 (67)	108 (25)	34 (8)
Did a medical specialist initiate a contact with you regarding children in your class?	383 (89)	39 (9)	8 (2)
Have you accompanied a child to an appointment with a medical specialist?	396 (92)	30 (7)	4 (1)
If you made a contact with a medical specialist, was he compliant?	215 (50)	142 (33)	73 (17)

Table 2. Participants' responses on items related to knowledge about the criteria and adequacy of training regarding referrals of children (N=430)

Items	Yes N (%)	No N (%)	Don't know N (%)
Are you aware of any guidelines for referral of children to a neurological-medical evaluation?	176 (41)	168 (39)	86 (20)
Is there a need to publish clear guidelines to teachers regarding when to refer a child to a medical specialist?	391 (91)	22 (5)	17 (4)
Do most of the teachers nowadays know when to refer a child to a medical specialist?	65 (15)	202 (47)	163 (38)

children who need to be referred for neuro-developmental evaluation?). Responses were three options: yes, no or don't know.

Beliefs and opinions about collaboration between teachers and medical specialists- In this section, teachers were asked about their own opinions regarding the current communication with the medical specialist as well as the needs for future improvement. For example, is there a need for regular visits of medical specialist in schools or is it the medical specialist's responsibility to provide a detailed letter summarizing the medical recommendations. Responses in this section were rated on a five- point scale: strongly agree, agree, disagree, strongly disagree and do not know. In addition, this section includes an open question 'What do medical specialists have to know regarding communication with teachers' and an option to add further suggestions.

RESULTS

Descriptive statistics were used to describe characteristics of the study variables. More than half (56.2%) of the teachers in this sample worked in regular classes in mainstream schools, 36.4% in special education schools, and 7.4% in special education classes within regular schools, with an average of 14.7 years of

teaching experience (S.D= 9.45, range= 1-40 years). Most teachers (56%) reported referring an average of 1-3 children per year for a medical-neuro-developmental assessment, and 25% reported referring up to 5 children per year. The main reason for referral was suspected ADHD symptoms. Table 1 summarizes the main results for items related to personal experience in collaborating with medical specialists. Results show that only 34% of teachers had direct contact with the medical specialist regarding diagnosis of the child, and only 29% of teachers had an on-going contact with him regarding management of children in the class. Most teachers (69%) were under the impression that the medical specialist who makes the diagnosis of ADHD does not have a full picture of the child's condition. Three quarters of the teachers reported that some children's treatment was compromised due to lack of collaboration between the health and education systems, and 95% believed that better collaboration is needed.

As can be seen in table 2, most participants (88%) agreed that teachers should be trained to identify children needing referrals, and 75% admitted that they have not received such training. Table 3 presents the main results for items related to beliefs and opinions about collaboration between teachers and medical specialists. Most teachers (85%) agreed that collaboration between health professionals and the education system would

Table 3. Participants' responses on items related to beliefs and opinions about collaboration between teachers and medical specialists (N=430)

Items	Agree N (%)	Disagree N (%)	Don't know N (%)
Contact between medical specialist and teacher should be direct (with family consent)	331 (77)	47 (11)	52 (12)
Medical specialist who is not in direct contact with the education system, might hold only partial information regarding the child	383 (89)	21 (5)	26 (6)
Partial information may lead the medical specialist to wrong or unsatisfying management decision	357 (83)	17 (4)	56 (13)
Is there a need for better collaboration of the medical specialist with the education system?	280 (65)	21 (5)	129 (30)
It is the school responsibility to provide parents (with their consent) with a detailed letter before every appointment with the medical specialist.	318 (74)	39 (9)	73 (17)
It is the medical specialist's responsibility (with parents' consent) to provide school with a detailed report and recommendations	387 (90)	4 (1)	39 (9)
Personally, do you feel the need for professional enrichment on developmental-neurological issues regarding children with diseases and disabilities that affect their learning abilities?	383 (89)	30 (7)	17 (4)
Personally, will this enrichment improve children's condition?	361 (84)	9 (2)	60 (14)

improve the quality of child's care, and 94% stated that the current practice is partially satisfactory or unsatisfactory. Ninety-five percent (95%) of teachers asked for regular education in the field of neuro-development and related topics. When asked about their willingness to collaborate with the health professional despite the time and effort it demands, 46% stated 'when needed', and 38% rated their willingness to do so as 'much' or 'very much'.

DISCUSSION

Due to the heterogeneity, ambiguity, and high comorbidity of ADHD, the literature supports a multimodal intervention approach that includes comprehensive services, such as mental health, education, and social services (Ialongo et al. 1993; Salmon, Cleave, & Samuel, 2006). Multimodal treatment requires teamwork and assumes shared responsibility for school success. It requires cooperation between health-care professionals, school personnel, and parents to design individually-based interventions that address specific weaknesses and build on strengths. Unfortunately, studies consistently show that communication between these agencies occurs infrequently (Chan et al. 2005; Wolraich et al., 2005). Although it is clear that teachers play a central role in reporting symptoms, advising parents to seek assessment, and assisting children with ADHD to achieve academically and socially (Sax and Krutz, 2003), many teachers lack the information, time, and resources needed for these children to succeed in the

classroom. Up to date, literature specific to teachers' knowledge about ADHD, and especially their knowledge and attitudes towards collaboration with medical providers, is scarce. The aim of this study was to evaluate teachers' knowledge, perceptions, and needs regarding the teacher-physician working relationship and perceived barriers for collaboration.

The findings of this study point to an alarming lack of communication between teachers and medical specialists. The majority of teachers in this study reported that once the referral to medical assessment has been made, they are not involved anymore in the diagnosis and treatment of children in their class. Despite the AAP's (2000) recommendation to obtain information from teachers about ADHD and potential comorbid conditions in conducting an assessment of ADHD, only third of the teachers in our sample were consistently asked to be engaged in this procedure. In most cases, neither the teacher nor the medical specialist initiated a communication about a referred child. However, it seems that teachers were more often willing to do so.

Findings regarding teachers' knowledge about referral criteria and procedure of children with ADHD symptoms were not more encouraging. Most of the teachers felt that they did not know when to refer a child to a medical assessment of ADHD and recognized their need for better training and guidance regarding common neuro-developmental disorders. This finding echoes a long line of studies in which teachers reported on a lack of training in ADHD and acknowledged the need for additional training concerning this disorder (Weyandt, 2007; Yasutake et al., 1994). In addition, the majority of the

teachers emphasized the importance of direct and frequent communication with the treating physician. Most of them thought that both physician and the teacher should deliver updated information about the child in order to provide optimal and accurate intervention. Importantly, most teachers were willing to dedicate time and effort for such collaboration. These data, which were collected in Israel, are in line with previous research that indicated insufficient communication between teachers and physicians (Leslie and Wolraich 2007), suggesting that this is a global concern. In the absence of direct contact between medical specialists and teachers, the process of assessment and management relies on parents going from service to service rather than receiving a joined-up approach (Salmon and Kirby 2009). In this situations, some of the information might become distorted or lost (Ford et al. 2012; Koulouris, 2004; O'Keeffe and McDowell 2004), leading to unjustified referrals to physicians on the one hand and misinterpretation of child observation on the other (Lian et al. 2008).

Since the publication of AAP guidelines in 2000, very little effort has been directed at improving collaboration between primary care physicians, mental health providers, families, and the education system. Wolraich and colleagues (2005) developed an intervention consisted of group workshops and single one-on-one tutorials with every sector (including parents, teachers, and primary care providers) about the evaluation and treatment of ADHD. Results showed short term improvements in the communication across sectors. The intervention had no effect on behavioral symptoms. Foy and Earls (2005) described a collaborative process between elementary school personnel and community health care providers in two communities in the United States. As a result of this process, a shared consensus was achieved regarding ideal ADHD assessment, treatment, and management principles, including an agreed entry point at schools for children needing assessment, forms for collecting and exchanging information at every step, and key contacts (e.g., school nurse) for flow of communication. This program was successful in improving collaboration, but no data are available regarding its outcome in terms of reducing ADHD symptoms. These initial findings suggest that although improving collaboration between the education and health systems is a complex task with many obstacles, it could be definitely reached with the appropriate interventions.

Implications, limitations and future research

This study adds an important contribution to the knowledge about the role of teachers in ADHD care, especially in a relatively unstudied area of collaboration

between school and medical professionals. These findings are important when considering training programs for both teachers and physicians. These study clarified teachers' need for further training in ADHD care, especially when it comes to referral criteria and engagement in the diagnosis and treatment of children. Medical professionals, on the other hand, should be further acknowledged about the critical role of teachers and should be encouraged to adapt more systematic approach for ADHD care. Our results clarify the fact that providing high quality ADHD care will necessitate a number of changes in the current delivery systems. Mainly, it requires a structured system for communication among parents, teachers, and medical specialists. Better teachers' training at this field and improved communication with physicians will enhance identification of developmental and behavioral problems, decrease unneeded referrals, and have the potential to improve public health in the long term. Future research is needed to develop and assess programs for improving collaboration between school, family and medical professionals.

The results of the present study should be considered under several limitations. First, after receiving the questionnaire, it was the teachers' choice whether to complete it or not. Although the sample size was large ($n = 430$), one third of questionnaires was unreturned. This self-selecting method limits the generalizability of our results. In addition, it is impossible to rule out the possibility that participation in this study was confounded with other teachers' variables, such as seniority, experience with ADHD, or confidence with working with ADHD children. This research is also limited by the use of descriptive statistics analysis. This type of statistical analysis provides a distribution of the variables of interest so that inferences could be made about a specific phenomenon (Gall et al. 2007). However, it does not indicate correlations or causal relationship between variables, therefore limits drawing conclusions about outcomes and causes. Another limitation to this study is the lack of information regarding the psychometric properties of the questionnaire. Since the current study was the first to use this scale to examine teacher-physician collaboration, additional studies are needed to further examine its utility.

Conflict of Interests

All authors report that they have no conflicting interests.

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