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Teacher Knowledge of Attention Deficit Hyperactivity Disorder Among Middle School Students in South Texas

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Abstract

This quantitative study examined the knowledge levels middle school teachers in South Texas have in relation to attention deficit hyperactivity disorder (ADHD). The study specifically compared teacher knowledge levels among three specific ADHD knowledge areas: (a) general knowledge of ADHD, (b) knowledge of symptoms/diagnosis of ADHD, and (c) knowledge of treatments for ADHD. The three subscales were measured by the study instrument, Knowledge of Attention Deficit Disorders Scale (KADDS). The sample for this study involved 107 teachers from five predominately Hispanic middle schools in South Texas. The middle schools were in three independent school districts, and data were collected during the 2008–2009 school year. Results indicated that teachers' greatest area of knowledge dealt with identifying the symptoms/diagnosis of ADHD. Teachers had lower scores related to general knowledge and knowledge of treatments for the disorder. Implications of the study results are discussed, and recommendations are presented.

Introduction

Educators must be adequately prepared to teach adolescents and to meet the individual needs of all students. The work of the teacher becomes more demanding when some learners have Attention Deficit Hyperactivity Disorder (ADHD), as their troubles with attention span, managing their impulses, and activity level often obstruct classroom activities (DuPaul & Stoner, 2003). Children spend most of their time in classrooms and other school settings where they are expected to follow rules, act in socially proper ways, participate in academic activities, and not interrupt the learning development or activities of others (Kleynhans, 2005).

The designation of ADHD is a modern analytical marker applied to explain people who possess major problems with attention, hyperactivity, and impulsivity. ADHD is the most diagnosed psychiatric children's disorder (American Psychiatric Association [APA], 2000). Epidemiological studies have indicated that between 3% and 7% of children in the United

States will be diagnosed with ADHD (Barkley, 1998b). It is likely that there will be a minimum of one child with ADHD in each classroom in every school (Kleynhans, 2005).

Children who demonstrate ADHD symptoms are often referred for assessment during elementary school years. Indicators of ADHD in the classroom include a child's inability to perform when asked to engage in activities such as paying attention, following instructions, and staying seated in a controlled classroom environment, that contradict the main character of the disorder (Barkley, 1998a). Many teachers recognize the main characteristics of ADHD, especially the key symptoms of ADHD. Teachers recognize, for example, that children with ADHD are restless (Kleynhans, 2005). Some studies have shown that ADHD training is not part of teachers' initial training (Holz & Lessing, 2002; Jerome, Gordon, & Hustler, 1994). For that reason, teachers often learn about ADHD through actual classroom experiences of teaching students who have confirmed diagnoses (Kleynhans, 2005).

ADHD can have wide-ranging effects on the lives of the people with the disorder. Adolescents with ADHD often have severe problems in many areas of performance, including educational success and interaction with peers (Wolfe & Mash, 2006). ADHD often coexists with other troublesome behavior disorders, including oppositional defiant disorder (Wolfe & Mash, 2006).

There have been numerous studies on ADHD, much has been in the range of measurement (Angello, Volpe, DiPerna, Gureasko-Moore, Nebrig, & Ota, 2003; Hartnett, Nelson, & Rinn, 2004), treatment (Fabiano & Pelham, 2003; Miranda, Presentacion, & Soriano, 2002), and the etiology of this disorder (Barkley, 1998a). There is also research on coexisting disorders (Biederman, Faraone, Mick, Moore, & Leon, 1996; Jensen, Martin, & Cantwell, 1997). The study of ADHD in educational settings has focused on the academic and social problems of ADHD learners in the classroom (Barkley, 1998a; DuPaul & Eckert, 1997).

A small number of studies have measured teachers' knowledge and perceptions of ADHD in the middle schools. Teachers are influential in the diagnosis of ADHD because of their daily contact with students in a range of pertinent situations (Pelham & Evans, 1992). Teachers tend to initiate requests ADHD assessments for students. (Lawson, 2004). ADHD assessments have been used as a gauge the spectrum of a child's symptoms (Pelham & Evans, 1992). The Diagnostic and Statistical Manual for Mental Disorders (APA, 2000) necessitates that the hyperactive, impulsive, or inattentive symptoms should exist in two or more environments (e.g., at school and at home). The psychologist or medical practitioner needs thorough information from school personnel to assist in making a diagnosis; therefore, the teacher's perspective is important in making a diagnosis (Kleynhans, 2005; Wolraich et al., 2003). The goal of diagnosis is not merely the diagnosis itself but also to plan interventions that are likely to be successful, based upon the information gathered (DuPaul & Stoner, 2003).

A study of 401 primary care pediatricians established that more than half relied only on school reports in arriving at diagnoses of ADHD (Carey, 1999). It is crucial for teachers to be capable of recognizing the characteristics of ADHD and of implementing proper classroom modifications. A study by Jerome and colleagues (1994) indicated that teachers do not have enough accurate information about ADHD to properly serve students who have either been diagnosed with the disorder, or are unidentified).

Issues such as inattention and hyperactivity/impulsivity may impact a child's classroom conduct and his or her capability to learn resulting in lower academic success and diminished performance in the school surroundings (Chronis, Jones, & Raggi, 2006). Teachers have to differentiate for learners that have special needs. Results of the current study will provide additional information for local teachers and administrators, which will ultimately benefit the ADHD learner.

Purpose of the Study

The rationale for this research study was to examine middle school teachers' level of knowledge regarding attention deficit hyperactivity disorder. The study questions were:

1. What are the levels of teachers' general knowledge of ADHD, knowledge of symptoms/diagnosis of ADHD, and knowledge of treatments for ADHD?

2. Are there statistically significant differences in the levels of teacher knowledge among the knowledge areas: general knowledge of ADHD, knowledge of symptoms/diagnosis of ADHD, and knowledge of treatments for ADHD?

Methods and Procedures

The research design for the study was descriptive and comparative. A descriptive design permitted the researcher to assess the opinions, attitudes, and knowledge of the participants as they relate to ADHD. In descriptive research, the researcher describes a sample as a whole, defines variables, measures them, and for the measure or subscale computes descriptive statistics, which include central tendency and measures of variability (Gall, Gall, & Borg, 2007). Descriptive research studies are non-experimental investigations, whereby the researcher attempts to describe the way things are and compare how subgroups such as experienced or inexperienced teachers view issues and topics (Gay & Airasian, 2003). The study's use of the comparative design allowed for the examination of differences among ADHD knowledge subscale scores on the study instrument. The knowledge area subscales were as follows: General Knowledge, Symptoms/Diagnosis, and Treatment.

Instrumentation

A survey instrument was used to collect data from the participants to measure teachers' knowledge about ADHD. The instrument was the Knowledge of Attention Deficit Disorders Scale (KADDS). This questionnaire was developed by Sciutto, Terjesen, and Bender Frank (2000) and has previously administered in six New York area schools. The KADDS questionnaire was also used in a study in Victoria, Australia, by Kos, Richdale, and Jackson (2004). Dr. Mark Sciutto from Muhlenberg College in Allentown, Pennsylvania, granted permission for the questionnaire to be used in this study. KADDS is a 39-question scale intended to measure teachers' knowledge and perceptions of ADHD. Every KADDS question is a declaration in reference to ADHD and uses a *true* (T), *false* (F), or *don't know* (DK) structure. This structure permits the demarcation of what teachers do not know from an incorrect belief or misperception (Sciutto et al., 2000, p. 116).

The KADDS construct deliberately includes only items that are empirically supported and well documented (Sciutto et al., 2000). The items in the KADDS questionnaire submit to both positive and negative signs of ADHD. Items assess respondents' knowledge of not only what ADHD is but also what it is not. Thus, items referring to negative behaviors include characteristics of other mental disorders. The original questionnaire was piloted twice, and the items were modified after each administration. Bender (in Sciutto et al., 2000) found good internal consistency for the KADDS ($\alpha = .81$) as well as pre-post change significance for the two types of educational interventions, indicating preliminary evidence for the validity of the KADDS (p. 118).

Data from five later studies suggested that the KADDS total scale (36 items) has high internal consistency (.80 to .90) (Sciutto et al., 2000). The three subscales within the measure (Associated Feature/General Knowledge, Symptoms/Diagnosis, and Treatment) all had moderate levels of internal consistency (.52 to .75). The coefficient alphas were lower for the individual subscales when compared to the coefficient alpha for the total scale. However, this discrepancy is likely due, in part, to the fewer items that compose each subscale in comparison to the entire KADDS scale.

Study Participants

The target population for the study included five public middle school campuses in three independent school districts in South Texas. Teachers from all content areas were able to participate in the study and complete the KADDS instrument. From this target population of 341 teachers, the respondent sample size was 107. The number of responses by participating school districts included 75 responses from School District A, 17 from School District B, and 24 from School District C.

All data were entered into a computer software program called Statistical Program for Social Sciences (SPSS) for analysis. The specific variables were total knowledge scores of ADHD, general knowledge, symptoms/diagnosis, and knowledge of treatment in relation to ADHD. Additional demographic variables that were collected included the level of education of the teachers, number of years of teaching experience, and number of courses taken in higher education that covered ADHD.

Results

Once data were collected, the first task was to examine the variables for accuracy. Descriptive statistics, in the form of frequency distribution for categorical items and any issues that might negatively influence the data analysis, were computed, including the mean and the standard deviation for the numeric variables.

Table 1 indicates the number of teachers that corresponded with the different levels of education. The majority of surveyed teachers (79.5%) selected bachelor's degree as their highest level of education. Approximately 20% of respondents selected master's

Table 1
Demographic Characteristics for Highest Level of Education, N = 107

Variable	η	%
Bachelor's Degree	85	79.5
Master's Degree	22	20.5
Doctoral Degree	0	0

degree, and none of the participants reported attaining a doctoral degree.

The second demographic variable collected was the level of coursework dealing with learning disabilities. As indicated in Table 2, approximately 66% of the respondents had no previous coursework in their teacher preparation college courses dealing with learning disabilities, in particular ADHD. Approximately 18.7% had at least one course in higher education coursework dealing with ADHD; 3.7% and 6.5% had three or more courses respectively. It appeared that some teachers were completing their preparation programs with little to no coursework covering the education of students with special needs related to ADHD.

Table 2
Number of Courses Taken Related to ADHD, N = 107

Variable	η	%
Zero	71	66.4
One	20	18.7
Two	5	4.7
Three	4	3.7
Four or more	7	6.5

Table 3 indicates that the response category with the highest frequency of responses was one to five years of teaching experience (29%). There were 23 respondents (21.5%) who had taught six to ten years, 21 respondents (19.6%) who had taught 11 to 15 years, and 18 (16.8%) who had taught more than 20 years. While many of the teachers were new (one to five years of experience), the respondents were spread somewhat evenly across the five levels of teacher experience.

Table 3
Number of Years of Teaching Experience, N = 107

Years of Teaching Experience	η	%
1 to 5 Years	31	29.0
6 to 10 Years	23	21.5
11 to 15 Years	21	19.6
16 to 20 Years	14	13.1
More than 20 Years	18	16.8

Descriptive data analysis of the demographic variables concluded that most of the teachers had four-year degrees and no coursework related to ADHD. It appears that teachers are obtaining teacher certification without instruction pertaining to ADHD.

The research questions that guided the study were examined using both descriptive statistics and the general linear model (GLM) procedure, univariate analysis of variance (ANOVA).The survey results were reported for three subscales of teacher knowledge of ADHD, symptoms/diagnosis of ADHD and treatments for ADHD. The descriptive analysis results reported the mean scores ranged from 46% to 66%. The means and standard deviations are presented in Table 4.

Table 4
Average Score Performance on KADDS Subscales, N = 107

Variable	*M*	*SD*
General Knowledge	46.49	17.39
Symptoms/Diagnosis	66.70	17.88
Treatment Knowledge	56.92	17.76

We conducted a one-way analysis of variance (ANOVA) to evaluate the differences in teacher scores among the three KADDS subscales (general knowledge, knowledge of symptoms/diagnosis, and knowledge of treatment). The overall results for the ANOVA indicated significant differences among the subscale scores, F (2, 318) = 34.97, p, .001 , η^2 = .180. The effect size index, η^2 = .180, indicated a strong relationship between the knowledge areas measured on the instrument and the scores teachers received for each of the scales.

We conducted follow-up tests to evaluate pair-wise differences among the means. Based on the results of Levene's test for the homogeneity of slopes, we used the Bonferroni procedure. There were statistically significant dfferences in teacher knowledge scores between each of the three subscales. The general knowledge score was a mean score of 46.49% (*SD* = 17.39). The Symptoms/Diagnosis knowledge score was a mean score of 66.70% (*SD* = 17.88), and the treatment knowledge score was a mean score of 56.92% (*SD* = 17.76). The differences among each of the means were statistically significant at the .05 level [F (2, 318) < .001, η^2 = .180].

Discussion

Attention Deficit Hyperactivity Disorder (ADHD) often poses a significant problem at home and in the classroom for students and teachers alike. An estimated 8.7% of United States children ages 8 to 15 meet diagnostic criteria for ADHD. This statistic is equivalent to 2.4 million children nationwide (Journal of the American Medical Association, 2007). Children with ADHD are at an increased risk of academic failure due to the troublesome characteristics, yet many teachers lack the information, time, and resources needed for these children to succeed in the classroom. Literature addressing general aspects of ADHD is abundant, but literature specific to teacher knowledge is scarce.

The data analysis indicated that the levels of knowledge of ADHD among middle school teachers in South Texas are low, with scale knowledge scores ranging from 46% to 66%. General knowledge had the lowest score from the study sample. These findings highlight the fact that institutions of higher education and school districts have not been successful in the special education preparation of middle school teachers. The large amount of resources in time, effort, staff development, curriculum, and implementation appear to have little impact on teacher preparedness to deal specifically with students with ADHD. The results of this study have implications for professional development needs of middle school teachers.

Based on the review of literature, children with ADHD are known to experience persistent behavioral and social problems as well as significant academic difficulties that adversely affect their school performance (Montague, Enders, & Castro, 2005). The majority of prior research has focused on treating the behavioral symptoms (i.e., inattention, impulsivity, and overactivity) of ADHD rather than the associated academic problems (Angello et al., 2003; Hartnett et al., 2004).

With the possibility of behavioral and social problems in children with ADHD, school district level administrators are encouraged to work with institutions of higher education and alternative teacher certification programs to help better prepare teachers to select and implement interventions that would maximize the likelihood of school success gap for children with ADHD and other learning disabilities. This study's findings indicated that teachers know the least (*M* = 46.49, *SD* = 17.39) about the the nature, causes, and outcomes of ADHD. They understood slight more about the treatment of ADHD (*M* = 56.92, *SD* = 17.76) and score highest in the area of area of symptoms/diagnosis knowledge (*M* = 66.70, *SD* = 17.88). The results from this study concur with the results found in separate studies by Sciutto and associates (2000) and Francis (1993. The subscale score supports Francis' (1993) claim that teachers have the capacity to distinguish the symptoms of ADHD, but lack training in the nature, causes, and outcomes of the disorder. In another study by Holz and Lessing (2002), the researchers stated, "The inaccessibility to learning material and educators who lack in-service training in managing the diverse needs of learners in a classroom are some of the contributory factors to learning problems" (p. 40).

Based on the findings from this study, teachers lack information about the causes, nature and outcomes of ADHD. Teachers are often familiar with information about the symptoms/diagnosis of ADHD but may have difficulty identifying symptoms in a particular student. Teachers may be apprehensive about medications as treatment but would favor a medication assessment based on their past understanding of academic and behavioral progress for some students consuming stimulant medications.

Teachers' continued exposure to students diagnosed with ADHD may increase their levels of understanding. KADDS survey results indicated that teachers who have worked with children that have ADHD, in general, score significantly higher on KADDS (Sciutto et al., 2000). KADDS scores increase as teachers become more familiar and have more information about ADHD (Sciutto et al., 2000).

Our findings provide insight into the area of teacher preparation of students with learning and behavioral disabilities. The study intended to provide information about the current level of middle school

teachers' knowledge of ADHD. Both findings and recommendations should be of interest to institutions of higher education, school districts, education agencies, and those responsible for developing and creating differentiated instructional strategies for commercial purchase. General recommendations, based on the analysis of the study data, include the following:

1. Middle schools should include condition-specific (including ADHD) staff development programs as a continuing activity to improve the learning experiences of all children.

2. Key middle school personnel should be involved in the development of condition-specific, ongoing, staff development programs. School counselors, nurses, and social workers should be involved in the planning and implementation processes.

3. Middle school administrators should develop and maintain systems of regular communication between teams of teachers with varying years of experience to increase awareness of broad student issues that impact the educational environment and to encourage collegial support.

4. Institutions of higher education as well as alternative teacher education programs should enhance teacher preparation courses to address conditions or disorders that affect students with learning and behavioral disabilities, such as ADHD.

The knowledge teachers have about ADHD may influence how they interact with and educate children with ADHD. Teachers who have a solid understanding of learners with ADHD may have a less negative attitude toward them and be less like to negatively label them. (Holz & Lessing, 2002). Past studies have established that teachers provided incorrect recommendations to parents of children with ADHD and that parents regularly followed that advice (Kos, Richdale, & Jackson, 2004). According to Pfiffner and Barkley (1998), teachers often have a mediocre understanding of the character, path, and consequences of ADHD, and they have a tendency to lack understanding about proper mediations for the students with ADHD.

Knowledge of this disorder is crucially important in applying useful interventions (Miranda et al., 2002). The classroom is an ideal environment in which interventions to improve the personal, social, and academic progress of children with ADHD can be sustained. Teacher and student success using classroom interventions depends heavily on the teacher's readiness to engage with students who have ADHD (Miranda et al.).

Further research is recommended to examine individual special education program success in identification and instruction for students with special needs, to examine degree programs that help future educational leaders in the areas of differentiated instruction in special education, and to observe excellent teacher professional development programs that positively impact student academic success. Designs for potential research should focus on interceding to raise teachers' knowledge about ADHD by producing opportunities for understanding students with ADHD. Past research supports the idea that familiarity with teaching students diagnosed with ADHD connects to teachers' having increased knowledge (Kos et al., 2004) and that education about ADHD increases teachers' knowledge as well (Barbaresi & Olsen, 1998). Only through continued research efforts can change occur in the educational process that will positively impact the lives of students with ADHD.

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