The Relationship between Teacher Knowledge of Attention Deficit Hyperactivity Disorder Among Middle School Students in South Texas and Teacher Training and Experience

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Abstract

The researchers examined the knowledge middle school teachers in South Texas have in relation to ADHD. Explored were the relationships between teachers’ demographic characteristics such as levels of education, number of years teaching, and past attention deficit hyperactivity disorder training, and their knowledge of ADHD. The sample for this study involved five predominately Hispanic middle schools in South Texas during the 2008-2009 school year. An examination of the findings indicated a non-significant correlation between the number of courses taken and the teachers’ knowledge score. Similarly, the number of years of teaching experience and the level of education attainment did not make a statistically significant difference in teacher knowledge of ADHD. Implications and recommendations are discussed.
The Relationship between Teacher Knowledge of Attention Deficit Hyperactivity Disorder among Middle School Students in South Texas and Teacher Training and Experience

Attention Deficit Hyperactivity Disorder (ADHD) is the current analytical marker applied to diagnose individuals that possess major problems with attention, hyperactivity, and impulsivity, and is the most diagnosed psychiatric children’s disorder (American Psychiatric Association [APA], 2000). Epidemiological studies have indicated that among 3% and 7% of children in the United States will be diagnosed with ADHD (Barkley, 1998b). With rates like these, it is likely that there will be a minimum of one child with ADHD in all classrooms in every school (Kleynhans, 2005).

Children spend most of their time in classrooms and other school settings. Here they are expected to follow rules, act in socially proper ways, play a part in academic activities and not interrupt the learning development or activities of others (Kleynhans, 2005). The work of classroom teachers becomes even more demanding when some learners have Attention Deficit Hyperactivity Disorder (ADHD), as their troubles with attention span, impulse control, and activity level often obstruct activities in the classroom and socially (DuPaul & Stoner, 2003).

Children that demonstrate symptoms of ADHD are often referred for assessment in the child’s elementary school years, due to the fact that children are asked to engage in activities that contradict the main character of the disorder, such as paying attention, following instructions and staying seated in a controlled classroom environment (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
They often base their reasons for referral on key symptoms. The difficulty with this is that quite a few of these key symptoms have unfortunate helpful diagnostic influence (Sciutto, Terjesen, & Bender-Frank, 2000). Many 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 that have a confirmed diagnosis for ADHD (Kleynhans, 2005).

ADHD can have wide-ranging effects on the lives of the people who experience problems due to having 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 is also comorbid (coexisting) with other troublesome behavior disorders, including oppositional defiant disorder (Wolfe & Mash, 2006).

There have been numerous studies in the area of ADHD. Much of this research has been in the area of measurement (e.g. Angello et al., 2003; Hartnett, Nelson & Rinn, 2004); treatment (e.g. Fabiano & Pelham, 2003; Miranda, Presentacion & Soriano, 2002) and the etiology of the disorder (e.g. Barkley, 1998a). There is also past research on comorbid disorders (e.g. Biederman, Faraone, Mick, Moore, & Leon, 1996; Jensen, Martin, & Cantwell, 1997). The study of ADHD in the arena of education has been disposed toward the academic and social problems learners with ADHD practice in the classroom (e.g. DuPaul & Eckert, 1997; Pfiffner & Barkley in Barkley, 1998a).

A small number of studies have measured teachers’ knowledge, perceptions and beliefs of ADHD in the middle schools (Pelham & Evans, 1992). This is unexpected, as teachers are seen as one of the utmost influential specialists of knowledge to the diagnosis of
ADHD because of their contact with students on a daily basis in a range of pertinent situations (Pelham & Evans, 1992). Teachers are typically the individuals who submit students for ADHD assessment, thus achieving a key element in the screening for ADHD (Lawson, 2004). These assessments have been used as a gauge of a child’s symptoms (Pelham & Evans, 1992). Furthermore, the demonstrative measure in 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). This necessity shows the importance of teachers’ acquired knowledge in making the diagnosis (Wolraich et al., 2003). The psychologist or medical practitioner needs thorough information from schools to assist in making a diagnosis (Kleynhans, 2005). The goal of diagnosis is not just the diagnosis itself, but also, based upon the information gathered, the planning of interventions that are likely to be successful (DuPaul & Stoner, 2003). A study of 401 primary care pediatricians established that more than half of them relied only on school reports in arriving at their diagnosis of ADHD (Carey, 1999).

Noteworthy is the fact that children with ADHD must meet the psychiatric criteria for the circumstance (Moore, 2004). It is crucial for teachers to be capable of recognizing the characteristics of ADHD, and implementing proper classroom modifications. The research has clearly 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 in need of identification (Jerome et al., 1994).

Several of the obstacles that distinguish ADHD, in cooperation with terms such as inattention and hyperactivity/impulsivity, may impede a child’s classroom conduct and their capability to be taught, resulting in lower academic success and diminished performance in
the school surroundings (Chronis, Jones, & Raggi, 2006). Teachers have to cope with learners that have special needs, such as those who have ADHD. This research can be a possible source of information for local teachers and administrators, and a benefit for learners in their classrooms.

The rationale for this action research study was to examine middle school teachers’ knowledge levels regarding attention deficit hyperactivity disorder. This study determined whether teacher knowledge of ADHD is related to their level of education, training, and years of teaching experience. The study was guided by the questions (1) What are the overall levels of teacher knowledge of ADHD based on the KADDS instrument? (2) What is the relationship between teacher knowledge of ADHD and teacher level of education? (3) What is the relationship between teacher knowledge of ADHD and the number of years teaching experience? (4) What is the relationship between teacher knowledge of ADHD and the number of ADHD courses taken?

**Method**

The overall research design for the study was descriptive, causal-comparative, and correlational. A descriptive design permitted the researcher to assess the knowledge of the participants as related 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).

**Instrumentation**

A survey instrument was used in collecting the 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 was used previously in research in six New York area schools. The KADDS questionnaire was also used in a study in Victoria, Australia by Kos, Richdale, and Jackson (2004). The questionnaire was obtained from Professor Mark Sciutto from Muhlenberg College in Allentown, Pennsylvania, who granted permission for the questionnaire to be used in this study.

KADDS is a 36-question scale intended to measure teachers’ knowledge and perceptions of ADHD. Every KADDS question is presented as a declaration in reference to ADHD and uses a true (T), false (F) or don’t know (DK) structure. This structure permits for the demarcation of what teachers do not know from an incorrect belief or misperception. The use of this structure makes it possible for a respondent to have a 50% chance of estimating the correct answer. The “incorrect guesses” could guide to erroneous estimations about teachers’ knowledge (Sciutto et al., 2000, p. 116). The current study examined teachers’ knowledge and perceptions of ADHD within three areas, namely symptoms/diagnosis of ADHD, general knowledge about the characteristics, basis and outcomes of ADHD and the treatment of ADHD, using a series of true-false-don’t know items.

When the KADDS was constructed, a deliberate effort was made to include only items that were 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 are projected to assess respondents’ knowledge of not only what ADHD is, but also what it is not. Thus, items referring to negative behaviors more characteristic of other mental disorders were also included. The original questionnaire was piloted twice before it was used in the first study and the items were modified after each administration. Bender (in Sciutto et al.,
“found good internal consistency for the KADDS (Cronbach alpha = .81) and significant pre-post changes in KADDS scores for each of two types of educational interventions, thus offering preliminary evidence for the validity of the KADDS” (p. 118). The instrument was deemed reliable.

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 teachers from five public middle school campuses in three independent school districts in South Texas. Each teacher from the middle schools was given the opportunity 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 SPSS for analysis. The specific subscale scores included for each teacher were knowledge scores of ADHD, including General Knowledge, Symptoms/Diagnosis, and Knowledge of Treatment in relation to ADHD. The additional variables included in the data file were the level of education of the teachers, number of years
of teaching experience, and number of courses taken in higher education in reference to ADHD.

**Results**

Upon the collection of the research data, the first task was to examine the variables for accuracy. Descriptive statistics were computed in the form of frequency distribution for categorical items and any issues that might negatively influence the data analysis were identified by computing descriptive statistics which included 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 teachers surveyed selected bachelors degree as their highest level of education (79.5%). Approximately 20% of respondents selected master’s degrees and none of the participants reported attaining a doctoral degree.

Table 1

Demographic Characteristics for Highest Level of Education, N = 107

<table>
<thead>
<tr>
<th>Variable</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bachelor's Degree</td>
<td>85</td>
<td>79.5</td>
</tr>
<tr>
<td>Master's Degree</td>
<td>22</td>
<td>20.5</td>
</tr>
<tr>
<td>Doctoral Degree</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

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 and 3.7% and 6.5% had three or more courses respectively.
Table 2
Demographic Characteristics for Number of Courses Taken Related to ADHD, N = 107

<table>
<thead>
<tr>
<th>Variable</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zero</td>
<td>71</td>
<td>66.4</td>
</tr>
<tr>
<td>One</td>
<td>20</td>
<td>18.7</td>
</tr>
<tr>
<td>Two</td>
<td>5</td>
<td>4.7</td>
</tr>
<tr>
<td>Three</td>
<td>4</td>
<td>3.7</td>
</tr>
<tr>
<td>Four or more</td>
<td>7</td>
<td>6.5</td>
</tr>
</tbody>
</table>

Table 3 denotes the majority of the respondents had one to five years of teaching experience (29%). There were 23 respondents (21.5%) that had six to ten years and 19.6% responded to having 11 to 15 years. Those respondents with more than 20 years of teaching experience were 18 of the 107 respondents (16.8%).

Table 3
Demographic Characteristics for Number of Years of Teaching Experience, N = 107

<table>
<thead>
<tr>
<th>Years of Teaching Experiences</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 to 5 Years</td>
<td>31</td>
<td>29.0</td>
</tr>
<tr>
<td>6 to 10 Years</td>
<td>23</td>
<td>21.5</td>
</tr>
<tr>
<td>11 to 15 Years</td>
<td>21</td>
<td>19.6</td>
</tr>
<tr>
<td>16 to 20 Years</td>
<td>14</td>
<td>13.1</td>
</tr>
<tr>
<td>More than 20 Years</td>
<td>18</td>
<td>16.8</td>
</tr>
</tbody>
</table>

Descriptive data analysis resulted in the conclusion that more than half of the teachers surveyed had no courses related to ADHD. Additionally, half of the teachers had ten years or
less of teaching experience. This indicates that teachers are obtaining teacher certification without instruction on the area pertaining to ADHD.

The three relationship research questions that guided the study were tested utilizing the general linear model (GLM) procedure univariate analysis of variance (ANOVA) and the Pearson product-moment correlation coefficient. The descriptive analysis for the first question examined the survey scores on the performance among the three subscales which included: teachers’ knowledge of general knowledge of ADHD, knowledge of symptoms/diagnosis of ADHD, and knowledge of treatments for ADHD. The results of the average percentage of scores are reported in relation to the performance of the three subscales.

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

<table>
<thead>
<tr>
<th>Variable</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Knowledge</td>
<td>46.49</td>
<td>17.39</td>
</tr>
<tr>
<td>Symptoms/Diagnosis</td>
<td>66.70</td>
<td>17.88</td>
</tr>
<tr>
<td>Treatment Knowledge</td>
<td>56.92</td>
<td>17.76</td>
</tr>
</tbody>
</table>

To answer the second research question, a one-way analysis of variance was conducted to evaluate the relationship between the two factor levels (Bachelors, and Masters/Doctorate) and the dependent variable being the score of the KADDS survey. The means and standard deviations for the percentage of performance are presented in Table 5. The results for the ANOVA indicated no statistically significant difference in mean KADDS scores between education groups, $F(1, 105) = .013, p = .908, \eta^2 = .000$. There is no statistically significant difference in teacher knowledge scores between highest degrees
attained. In other words, it appears that level of education is not related to knowledge of ADHD.

Table 5
Descriptive Statistics for Teacher Level of Education, N = 107

<table>
<thead>
<tr>
<th>Variable</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bachelors</td>
<td>52.58</td>
<td>14.99</td>
</tr>
<tr>
<td>Masters</td>
<td>52.18</td>
<td>10.54</td>
</tr>
<tr>
<td>Doctoral</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

A Pearson product-moment correlation coefficient was computed to assess the relationship between the years of teaching experience and the teacher knowledge scores on the surveys. The results of the correlational analysis indicated that there was a very weak and non-significant correlation between years of teaching experience and the teacher knowledge score, $r(105) = .05, p = .64$. A scatterplot summarizes the relationship in Figure 1. There appears to be no relationship between years of teaching and the level of ADHD knowledge that teachers have. Figure 1. Scatterplot of Years of Teaching and ADHD Knowledge Scores (N = 107).
A Pearson product-moment correlation coefficient was computed to assess the relationship between the number of courses taken dealing with ADHD and the teacher knowledge scores on the surveys. The results of the correlational analyses indicated that there was a weak and non-significant correlation between the number of ADHD courses taken and the teacher knowledge score, \( r(105) = .17, p = .08 \). A scatterplot summarizes the results in Figure 2. Similar to the previous findings, there appears to be no relationship between years of teaching and the level of ADHD knowledge that teachers have.
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 (JAMA, 2007). Children with ADHD are at an increased risk of academic failure due to the troublesome characteristics. In addition, many teachers lack 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 the teachers’ perception, and knowledge, as this study has shown, is scarce.

From the analysis of data, it can be concluded that the teachers’ level of education, the number of years teaching, and the number of courses taken in teacher preparation coursework at institutions of higher education appear to have no impact on knowledge of
ADHD. The findings of the study bring light to the fact that institutions of higher education and school districts have not been successful in the implementation and application of special education preparation. The large amount of resources in time, effort, staff development, curriculum, and implementation appear to have little impact on teacher preparedness to deal with students with ADHD. School districts must also include the component of evaluation on a regular basis to measure and assess the success of their efforts to increase the experiences of dealing with an ADHD student.

Most surprising may be the lack of statistical significance in the relationship between years of teaching experience and knowledge of ADHD. One would assume that with additional years of experience, teacher knowledge in all areas of education would increase. Direct experience with students with ADHD would give teachers an expanded knowledge base of the disorder. In South Texas, however, teachers may be more focused on Limited English Proficient (LEP) students, as they are intermingled into the typical classroom environment. Most of the accountability for teaching the LEP student is up to the regular classroom teacher, who may not be educated in dealing with this type of student. With the close proximity to Mexico, school districts in South Texas have emphasized teacher preparation to meet the needs of this diverse group of students. Therefore, there is great emphasis placed on staff development and training to exercise effective educational practices for these students to comply with national and state goals and initiatives.

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). Although it is acknowledged that children with ADHD fall behind their peers academically, the majority of research has focused on
treating the behavioral symptoms (i.e., inattention, impulsivity, and overactivity) of ADHD rather than the associated academic problems. School district level administrators must work with institutions of higher education and Alternative Teacher Certification Programs to help better prepare teachers to select and implement interventions in school settings that would more likely maximize the likelihood of school success and close the achievement gap for children with ADHD and other learning disabilities.

Findings presented in the study provide insight into the area of teacher preparation of students with learning and behavioral disabilities. The study was intended to provide information about the overall level of teacher ADHD knowledge and the relationship of teacher knowledge to education, training, and experience. Both findings and general recommendations should be of interest to institutions of higher education, school districts, Texas Education Agency, 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:

- School district leadership should implement condition or disorder specific (ADHD, Autism, Bipolar, Conduct Disorder, Dyslexia) staff development programs that would help the teacher to better facilitate the teaching of these special needs students.
- School district leadership, in addition, should develop a plan to provide ongoing specialized professional development in ADHD coupled with discipline management along with support through classroom follow-up to district teaching professionals.
- Alternative teacher education programs should include in their degree plans courses in dealing with special needs students or mandate observation hours in special education classroom environments.

- Graduate-level (School Administration) programs of study should require school administrators to enroll in course(s) dealing with current research on prominent educational learning and behavioral disorders.

The knowledge teachers have about ADHD may influence how they correspond with and educate children with ADHD. As a result, teachers may have a better understanding of learners with ADHD, which may stop them from having a negative outlook of these learners or labeling them (Holz & Lessing, 2002). Studies have established that teachers provided incorrect recommendations to parents of children with ADHD and that parents regularly followed that advice (DiBatista & Sheppard in 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 the understanding about proper mediations for the students with ADHD.

Knowledge of this disorder is crucially important to apply useful interventions (Miranda et al., 2002). The classroom can be seen as a vital and fitting location where the personal, social and academic progress of children with ADHD can be sustained by interventions implemented by teachers. The success of these interventions at school depends heavily on the teacher’s readiness to deal with students that 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, degree programs that help future educational leaders in the areas of differentiated instruction in special education,
teacher professional development program support, and implementation efforts in identifying the impact of student academic success that are identified ADHD. 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 (Barbaresi & Olsen, 1998) as well. Only through continued research efforts can change occur in the educational process that will positively impact the lives of students with ADHD.
References


