

Saudi Arabian Teachers' Knowledge and Beliefs about ADHD

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Abstract

Attention Deficit Hyperactivity Disorder (ADHD) is considered one of the most frequently diagnosed psychiatric childhood disorders. It affects 3–7% of school-aged children, interfering with their academic performance and social interactions. This study explored the knowledge and beliefs of teachers in Saudi Arabia about children with ADHD. The Knowledge about Attention Deficit Disorder Questionnaire (KADD-Q) was administered to a sample of teachers, followed by interviews with a subset of the total respondents. The results indicated that the teachers knew more about the characteristics of ADHD than they knew about its related causes and treatment. Overall, the findings indicated that these teachers had some knowledge about general characteristics of ADHD, but they had little understanding of causes and possible interventions. These results suggest an important need for more formal teacher training regarding all aspects of ADHD in school-age children.

Attention Deficit Hyperactivity Disorder (ADHD) can be described as a neurobiological, developmental, or neurodevelopmental disorder, which manifests as developmentally unsuitable inattentiveness and/or impulsivity and hyperactivity (American Psychiatric Association, 2000). It is a commonly diagnosed disorder in children with prevalence rates of between 3% and 7% (American Psychiatric Association, 2000). Children with ADHD experience many challenges in daily life, from learning disabilities to lower perceptions of self-worth, frustration, and depression; thus, they need support in several areas throughout their lives (Goldstein, Goldstein, Braswell, & Sheridan, 1998). ADHD symptoms have the potential to lead to considerable problems for the children with ADHD, their families, and the people they interact with at school (Barkley, 2006). The core symptoms of ADHD have considerable negative effects on child development in social, emotional, and cognitive skills (National Institute for Clinical Excellence, 2003), and pose considerable financial strain for healthcare and education systems (Barkley, 2006). Teachers are likely to be the first to detect any signs of ADHD within the classrooms, and as such, are expected to make the necessary referrals if they suspect that a student might

have ADHD (Snider, Busch, & Arrowood, 2003). Vereb and DiPerna (2004) believe that teachers' knowledge of ADHD and their practical experiences with students with ADHD are related.

This study is an initial attempt to investigate the knowledge and beliefs of teachers in Saudi Arabia about ADHD. There is no current research in Saudi Arabia on school-age children with ADHD, especially in terms of school-teachers' knowledge and beliefs about the condition. Although there are several studies (e.g., Faraone, Sergeant, Gillberg & Biederman, 2003; Polanczyk, Horta, Biederman & Rohde, 2007) that examine cultural differences concerning ADHD, little is known about how knowledge and beliefs are affected by the way the disorder is conceptualized due to cultural factors (Ghanizadeh, Bahredar, & Moeini, 2006). By providing a cultural dimension, the study adds to the broader international research based on the knowledge and beliefs of parents and teachers of children with ADHD.

Teachers' Knowledge and Beliefs about ADHD

A review of current research on ADHD regarding the knowledge of teachers indicates that there are

many misconceptions about the condition. Jerome, Gordon, and Hustler (1994) examined the general ADHD knowledge of a sample of American and Canadian primary school teachers and found that they had a good general ADHD awareness (78% for Canadians; 77% for Americans). Similarly, Barbaresi and Olsen (1998) corroborated these results with an overall knowledge rate of 77% for elementary school teachers in North America; however, the teachers were poorly informed on existing interventions for ADHD among children. Sciutto, Terjesen, and Frank (2000) conducted a study with 149 primary school teachers in the state of New York, USA, using the Knowledge of Attention Deficit Disorders Scale (KADDS). The teachers in that study scored a significantly lower rate of 48% of correct answers regarding what they knew about ADHD. Sciutto and colleagues (2000) stated that although teachers were largely knowledgeable about the main characteristics of ADHD, they were much less knowledgeable about the causes, interventions, and prognosis. Sciutto and colleagues (2000) and Anderson, Watt, Noble, and Shanley (2012) found that teachers with previous teaching experience with children with ADHD had, to a great extent, a better understanding of the condition in contrast to teachers with little or no experience. Arcia, Frank, Sanchez-LaCay, and Fernandez (2000) used the Teachers Rating Scale developed by Connors (1997) through semi-structured telephone interviews with 21 primary school teachers across three states in the USA. The teachers responded to questions concerning a child who met the complete diagnostic criteria for the disorder. Results of the study indicated that the teachers had a lack of understanding of ADHD behavioral profiles and were not knowledgeable of the principles of behavior management crucial for the planning and implementation of successful referrals and interventions. Sciutto and colleagues (2000) concluded that given these results, in-service training for teachers, about ADHD, should concentrate on behavior management.

Utilizing a somewhat modified version of the Jerome, Washington, Laine, and Segal (1999) questionnaire, Bekle (2004) presented information in relation to teachers and undergraduate pupils' knowledge and attitudes about ADHD. Thirty teachers and 40 primary school undergraduates participated in Jerome and colleagues' (1994) study. Jerome and colleagues' (1994) findings indicated that, while both the teachers and undergraduate pupils had similar perceptions regarding ADHD, the former were a little more precise in their answers. The results also showed a lack of knowledge. Although Bekle (2004) concluded that the results confirmed the need for

further teacher training, which directly addresses pupils with ADHD needs, readers are cautioned against over-generalizing the outcomes given the size of the sample. Based on these studies, there is evidence to suggest that teachers are not very knowledgeable about ADHD, with misconceptions apparently widespread among them. The fact that the knowledge of teachers has a direct impact on the classroom, subsequently affects students with ADHD in terms of performance and emphasizes the value of teachers having accurate knowledge about the condition (West, Taylor, Houghton & Hudyma, 2005). Specific suggestions for teachers working jointly with parents of such children are considered vital to determine parents' knowledge levels.

Kos, Richdale and Jackson (2004) conducted a study with 120 Australian elementary teachers and found a total knowledge score of 60.7%. Similarly, the Bekle (2004) study conducted with 30 teachers in Perth, Australia showed a total rate of 83%. West and colleagues (2005) administered a modified version of the KADDS to teachers in primary and secondary schools in Perth, Australia, and found that 53.9% of the teachers were knowledgeable about ADHD. In a more recent examination, with 140 elementary school teachers from Melbourne, Australia, concerning teachers' knowledge about ADHD, Ohan, Cormier, Hepp, Visser and Strain (2008) reported that the teachers answered correctly to 76.34% of the knowledge of ADHD items; however, they scored lower on knowledge of causes and interventions.

In Saudi Arabia, inadequate attention has been paid to teachers' experiences and the social implications of ADHD, such that a child is frequently viewed as being a problem. The gap in terms of ADHD understanding is placed in the broader social context understanding. Given this background, this current research explored the perceptions of the social consequences of unsuitable behavior. It is not the aim of this research to negate the existence of ADHD, but rather to suggest an alternative approach associated with thinking concerning the behavioral symptoms of ADHD. Therefore, this current study was designed to examine the knowledge and beliefs about ADHD as held by teachers of children with ADHD in a sample set of schools in the city of Jeddah, Saudi Arabia.

Method

Design

This research used a mixed-methods research design, comprising two distinct stages where quantitative and qualitative data were collected and

analyzed. The justification for this design is that quantitative data provides a general understanding of the research problem, (Creswell, 2003) while qualitative data and analysis refines and elucidates the quantitative outcomes by examining the views of the participants in greater depth. The initial data collection was through an Arabic translation of the Knowledge about Attention Deficit Disorder Questionnaire (KADD-Q) (West et al., 2005). The three main domains for ADHD inquiry were ADHD characteristics, causes, and interventions. A small sample of interviews was also conducted and the information gathered from them was included in the general analyses.

Participants

This study took place in the city of Jeddah, Saudi Arabia. Elementary school directors from all four quarters of Jeddah were enlisted to ensure demographic, geographic, social class, and religious diversity. The teachers were selected according to the Directorate General of Special Education's (2006) definition, which states that teachers of children with learning disabilities are responsible for children with ADHD. A stratified sampling approach was utilized in order to determine a sample of teachers since such individuals vary in different quarters of the city of Jeddah. In Saudi Arabia, all educational facilities are gender segregated both for children and the teachers. Among the participating public schools, 21 schools were for girls and 32 schools were for boys. A total of 73 questionnaires were distributed and 54 (74%) completed questionnaires were returned. Twenty-six female teachers and 28 male teachers returned completed questionnaires. The questionnaires were distributed and collected by the researcher. The questionnaires asked whether or not the participants were interested in participating in the interviews. From the 54 participants who completed the questionnaire, only ten responded positively from which only eight interviews were actually conducted; two participants were not available to be interviewed because they were busy with their academic assessments.

Instrumentation

The questionnaire used was the Knowledge about Attention Deficit Disorder Questionnaire (KADD-Q) (West et al., 2005). It comprises 67 rating scale items, all of which have been modelled after the KADDS (Knowledge of Attention Deficit Disorders Scale), which includes 20 items (Sciutto et al., 2000). Each item of the KADD-Q is phrased as a statement with a

response format of "True," "False," or "Don't Know," which allows participants to indicate what they believe they do or do not know concerning ADHD (Sciutto et al., 2000). The three main domains for ADHD inquiry in this study were ADHD characteristics, causes, and interventions.

As the decision of translation has a direct influence on the research and its validity, three methods were adopted in order to eliminate potential drawbacks: back-translation, consultation combined with collaboration, and piloting. Both the study tools and reported results were back-translated; both original and translated English copies were contrasted. No fundamental dissimilarities were identified. Translators were also consulted in order to develop and contrast versions, while piloting with some teachers assisted in developing study tools, which similarly aided in the language of Arabic as the tools were utilized in Arabic.

Procedure

The school directors from four quarters of Jeddah were contacted to ensure demographic and geographical diversity. Prior to the research implementation, permission, and collaboration were sought and received from the Jeddah Local Education Authorities for all participating schools. In the Kingdom of Saudi Arabia, for cultural and religious reasons, girls and boys attend gender segregated schools. Moreover, only males are permitted to visit boys' schools, and if necessary, women can telephone the boys' schools, and vice versa. Because the researchers in this study were all male, it was difficult to include female teachers in the study. However, some of the researchers' female relatives who work in schools provided assistance distributing questionnaires and conducting interviews with female teachers.

A small sample of semi-structured, more in-depth interviews were conducted either in person or over the telephone. Telephonic interviews helped to gain information from participants who were not easy to contact in person because of location constraints. It has been revealed by Sturges and Hanrahan (2004) that when comparing transcripts of personal and telephone interviews, there are no considerable dissimilarities in terms of interview validity.

Results

Questionnaires

The 54 teachers who participated in the study had an average number of years of experience of 5.28

Table 1

Analysis of Teachers' Knowledge by School Type (Questions 1–67) (N = 54)

Type of school	No. of Participants	Minimum Individual Scores	Maximum Individual Scores	Mean of Individual Scores
Public	42	17	44	30.71
Private	12	23	48	35.33

Table 2

Demographic Information of the Teachers (N = 8)

	Gender	School Type	School Location	Training	Info. and Skills
T1	Female	Private	North	Yes	Yes
T2	Female	Public	North	No	No
T3	Female	Private	East	No	No
T4	Female	Public	East	No	Yes
T5	Female	Public	East	Yes	Yes
T6	Male	Public	South	No	Yes
T7	Male	Public	North	No	Yes
T8	Female	Public	West	Yes	Yes

Table 3

Summary of Teachers' Sources of ADHD Information

Sources	T1(F)	T2(F)	T3(F)	T4(F)	T5(F)	T6(M)	T7(M)	T8(F)
University Studies	√	√	√	√	√	√	√	√
Courses and Conferences	√	√	√		√	√		√
Books	√					√		√
Experience	√	√	√	√	√		√	√
TV Programs							√	
Internet		√		√				
School Supervisors			√					
Parents of Children with ADHD	√		√					

years ($SD = 4.058$ years). Although the teachers' general qualifications ranged from secondary education to Ph.D., a majority ($n = 47$, i.e., 87%) held a bachelor's degree. Twenty eight (52%) of the participants were male and 26 (48%) were female. Forty two (78%) worked in public schools, 12 (22%) worked in private settings, and 48 (89%) taught at least one child with ADHD. Although only 11 (20%) teachers reported having ADHD specific training, 34 (63%) teachers answered "yes" that they had information and skills related to children with ADHD. The results from the teachers' questionnaires indicated that they answered correctly at a rate of 47% (range = 25%–72%). Of the three main domains included in this research, the teachers were found to be most knowledgeable about the general characteristics of ADHD and least knowledgeable about ADHD treatment. Results of a Kruskal Wallis Test showed statically significant differences between the three tested domains, that is characteristics, causes, and interventions ($p < 0.001$). A within-subject contrast applying the Mann-Whitney framework indicated that the scores on the characteristics subscale (68%) were significantly higher than either the causes subscale (37%) or the treatment subscale (33%) $p < 0.001$. As indicated in Table 1, private school teachers had higher scores than public schools teachers ($p < 0.05$) (t -test).

Figure 1 shows teachers' knowledge of ADHD, indicating what they knew, their misconceptions, and what they acknowledged they did not know.

Interviews

Table 2 provides details concerning the characteristics of the eight teachers who participated in the interviews. All of the eight respondents held a bachelor's degree and taught at least one child with ADHD.

Interviewee Sources of ADHD Information

Teachers revealed that they learned and gathered information about ADHD from sources ranging from personal experience to self-education and the media. See Table 3 for the teachers' sources of information about ADHD.

Table 3 shows that these eight teachers listed *University Studies* as their foremost source of information regarding ADHD. Seven of the eight teachers said that *Experience* (teaching children with ADHD) was their second most common source of information.

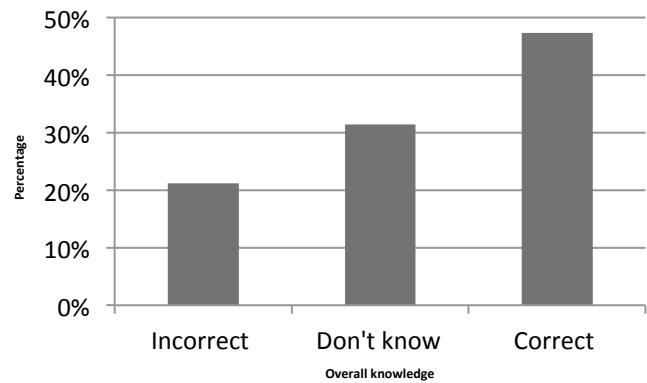


Figure 1: Teachers' Overall Knowledge of ADHD

Furthermore, regarding the availability and easy accessibility of sources of information for teachers, one female participant (T3) stated that:

There are not many sessions and lectures about the subject, which explains parents' ignorance about the subject and their children.

This statement was reiterated by seven out of the eight teachers (T1; T3; T4; T5; T6; T7; T8). The female teacher (T2) who disagreed said that:

There are many resources that talk about this problem and explain how to deal with it. Some centers offer training on the subject and invite the mother and the child. Also, some internet forums are formed by the mothers of these children, and also the teachers.

However, one male interviewee (T7) expressed his belief that there was:

...not enough advertisement about courses.

In their views, these teachers emphasized that correct knowledge and beliefs could be disseminated through a number of different educationally-orientated ways to increase awareness, as indicated in Table 4. As indicated in the table, teachers listed *Courses* as the most effective method of disseminating correct knowledge and beliefs, while *School psychologists* came last. Most teachers believed that the *Media* (television programs advertising awareness, radio programs, and newspapers) was a good means to provide correct knowledge, followed by *Brochures*, involving the parents, and a monthly newsletter. Half of them considered *Spread awareness*, *Parents*, and *Specialist Teachers* as sources of disseminating correct knowledge and beliefs.

Table 4

Summary of Suggested Modes of Information Dissemination

Mode of Information	T1(F)	T2(F)	T3(F)	T4(F)	T5(F)	T6(M)	T7(M)	T8(F)
Spread awareness (books, pamphlets, brochures, CDs, internet, 'Imam' of the mosques, malls, and fun fairs)			√	√	√		√	
Media (television programs, advertising awareness, radio programs, and newspapers)		√	√	√	√	√	√	√
Courses	√	√	√	√	√	√	√	√
Parents (direct the community)	√	√	√					√
Doctors (organize events)			√		√			√
Schools (school day, mothers' council, brochures, involving the parents, and a monthly newsletter)	√			√	√	√	√	
Specialist teachers	√		√				√	√
School psychologists							√	

Discussion

Findings of this study agree with the results of Jerome and colleagues (1994), Jerome and colleagues (1999), and Bekle (2004). Saudi teachers exhibit definite gaps and misconceptions in their knowledge of causes and interventions of ADHD, including the impact of diet, ADHD persistence, and general myths surrounding ADHD. As shown by Kos (2008), Saudi teachers agreed that ADHD is a medically valid diagnosis, an obstacle to educational success for ADHD children, and that managing behavior of ADHD students was problematic.

The teachers strongly disagreed with the misconception that the misbehavior of children with ADHD was due to being naughty. These findings suggest that teachers were, to some extent, knowledgeable about ADHD characteristics, but notably less informed about causes and treatment.

There has been some discrepancy in findings concerning whether or not years of teaching experience had an influence on teachers' knowledge of ADHD. Jerome and colleagues (1994) found a significant correlation between years of teaching experience and higher scores on knowledge of ADHD for teachers from Canada; however, the correlation did not hold for American teachers. In agreement with the Scituito (2000) study, this current study found that teachers' educational levels and their professional

development concerning ADHD were unconnected to their knowledge about ADHD. However, a statistically significant factor in the Scituito (2000) study was the connection between the number of students with ADHD the teachers had taught and ADHD knowledge. This result was not revealed in the present research; teaching children with ADHD and years of experience did not correlate with knowledge about ADHD. Little is known concerning the effects of diverse demographic information and teachers' knowledge. For example, the number of students who are presently on medication for ADHD and the knowledge of teachers regarding such medication, teacher type, and knowledge of ADHD would be interesting topics to examine in further studies.

Results of this current study suggest that the capability of teachers to identify likely causes of ADHD and suitable interventions does not increase with experience. One probable justification is that ADHD has only recently become well-studied and widely recognized as a childhood disorder (Niznik, 2004). Consequently, contemporary training programs might be better equipped to instruct teachers today. Another probable justification is that teachers who are more recently out of college could be more accepting of studies supporting the existence of ADHD.

Regarding classroom strategies, teachers believed that sustaining classroom organization and curriculum were critical skills that provided positive advantages

associated with the emotional support and reinforcement of children (Kos, 2008). In this study, most teachers believed that the diagnosis and medication of ADHD were positive for children. Proper medication helps children with ADHD to concentrate on their class work, stay focused on tasks, reduce disruptive behavior, and therefore, enhance their academic performance without distracting their classmates (Jensen et al., 2001).

The significance of related professional development for teachers has been highlighted in this current study, because teachers who attended courses about ADHD were more knowledgeable about it. The value of professional development is underlined by the results of Jerome and colleagues' (1994) study, which indicated that 90% of potential teachers had inadequate opportunities at university to be trained about ADHD. Therefore, we recommend that teachers ought to be given pre-service and in-service training in relation to behavioral and academic interventions pertaining to children with ADHD.

In Saudi Arabia, teachers do not have specific training about ADHD; rather, they have complete modules on educating special needs children as one element of their bachelor's degree in Special Educational Needs. Although the teachers are involved in professional development that occasionally address issues such as ADHD, their practices are predominantly formed from direct classroom interaction with students with ADHD. The importance of the courses and the form they should take are aspects that were discussed by some participants because they believed that they were not qualified to meet the needs of children with special needs.

Acknowledgement

This article was funded by the Deanship of Scientific Research (DSR), King Abdulaziz University, Jeddah. The authors therefore, acknowledge, with thanks, the DSR technical and financial support.

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