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RESEARCH ARTICLE

SPECIAL EDUCATION TEACHERS' KNOWLEDGE ABOUT ASPERGER SYNDROME IN SAUDI ARABIA

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ABSTRACT

The purpose of the study was to find out what special education teachers know about Asperger's syndrome. In addition, this study attempted to find out if there any significant differences in special education teachers' knowledge about Asperger Syndrome depending on teachers'(gender, education level, teaching experience, and level of professional development) variables. A total of 171 special education teachers from various segregated and inclusive schools in (Riyadh, Al-Baha, Jeddah, and Al-Dammam) in Saudi Arabia were asked to complete the Knowledge of Asperger- revised Scale - revised (KASP-Revised) to determine their level of knowledge about Asperger Syndrome. An analysis of the collected data, using descriptive statistics and analysis of variance, indicated that special education teachers have relatively moderate level of knowledge about Asperger Syndrome. The results also indicated that; female special education teachers, teachers with Master's degree or above, teachers with (>10) years of experience, and finally, teachers who had a previous professional development, had higher level of knowledge about Asperger Syndrome in comparison with other special education teachers groups.

INTRODUCTION

Asperger's Syndrome (AS) was first described by Austrian pediatrician Hans Asperger. In 1944, Dr. Asperger published a paper describing a pattern of behaviors in a number of young boys who exhibited autistic-like behaviors and evident deficiencies in social and communication skills (Klin, McPartland, and Volkmar, 2005). Almost 40 years later, Lorna Wing (1981) characterized (AS) using a number of clinical case studies. Wing brought Asperger's to the attention of researchers in autism and described the unique characteristics of these individuals with normal intelligence and severe social impairments (Klin *et al.,* 2005). The diagnosis of (AS) has been characterized with confusion since it was introduced in the *Diagnostic and Statistical Manual of Mental Disorders,* Fourth Edition (DSM-IV; American Psychiatric Association [APA], 1994). At present, Asperger's Syndrome is classified in the DSM-IV-TR as a pervasive developmental disorder characterized by difficulty in social interaction, restrictive patterns of interest, and stereotyped behaviors (APA, 2000). For example, a child with Asperger's disorder may have marked impairment in the use of nonverbal behavior, difficulty developing peer relationships, a lack of social reciprocity, inflexible adherence to routines, preoccupation with one or more stereotyped and restricted patterns of interest, and/or repetitive motor mannerisms. Individuals with Asperger's disorder demonstrate significant impairments in their social functioning and thus experience great difficulty interacting with peers. Though these children often seek out their peers, they do not have the appropriate social skills necessary to facilitate the formation of reciprocal relationships. The way in which children with Asperger's approach other children is typically awkward or inappropriate, conveying a sense of formality or insensitivity toward other's thoughts or feelings (Myles and Simpson, 2003). These children may approach other children and engage them in a one-sided, lengthy discussion about a topic of interest only to them (Klin *et al.,* 2005). Meanwhile individuals with Asperger's are often unable to read social cues, facial expressions, and nonverbal cues, they are frequently unaware of their peer's boredom or lack of interest in the topic being discussed (Attwood, 2003). These deficits make it quite difficult for children with Asperger's to form friendships, which often results in them becoming target of bullies at school (Myles and Simpson, 2003).

Children with (AS) also experience great difficulty with mind-reading, these individuals are unable to infer other's emotions, thoughts, or intentions. These skills are normally developed by four years of age in typically developing children (Barnhill, 2002). Skill deficits in this domain result in many challenges for children with Asperger's, For example; they cannot understand the reasons for others' behavior, children's intentions, the unwritten rules of behavior/communication, or the concepts of misunderstandings (Barnhill, 2002). Individuals with Asperger's disorder often have restricted patterns of interest. Frequently, these individuals will acquire a vast amount of factual information about a particular topic. The subject of interest may be one with which their peers are

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interested, yet individuals with Asperger's often ignore age appropriate topics and devote all of their attention to one theme. Examples of typical areas of interest mentioned in the literature include snakes, dinosaurs, geology, numbers, weather information, astronomy, etc. (Klin *et al.,* 2005; Myles and Simpson, 2003). This type of self-focused behavior can serve to socially isolate children with Asperger's disorder. In addition, since these individuals spend an abundant amount of time focused on their interest, their attention in the classroom may be quite variable. Thus, these students may miss crucial aspects of instruction throughout the school day resulting in poor academic performance (Klin *et al.,* 2005). Another aspect of communication in which individuals with Asperger's have difficulty is their speech patterns. Their speech is often tangential, circumstantial, and one-sided, as they tend to talk incessantly about their topic of interest regardless of whether their listener is engaged in the conversation (Church, Alisanski, and Amanullah, 2000; Klin *et al.,* 2005). Children with Asperger's also have some difficulty with pragmatics, as they often have difficulty interpreting abstract language. These children may interpret language in a literal and concrete manner (Eisenmajer *et al.,* 1996). As such, they may have difficulty understanding pragmatic language involving idioms, sarcasm, or humor (Martin and McDonald, 2004). Furthermore, a diagnosis of Asperger's disorder can only be made if the child's symptoms significantly impact his/her social, occupational, or other functioning (i.e., educational functioning). For a diagnosis to occur, the child must not exhibit any significant delays in language functioning, cognitive development, or adaptive behaviors. Finally, for a child to receive a diagnosis of Asperger's disorder, criteria must not be met for another pervasive developmental disorder or schizophrenia (APA, 2000).

Prevalence estimates of Asperger's disorder have been increasing in recent years (Klin *et al.,* 2005). Researchers have hypothesized that accurate prevalence rates are difficult to obtain due to the ambiguity of the definition and the validity of the diagnostic criteria (Klin *et al.,* 2005). Fombonne and Tidmarsh (2003) conducted a comprehensive review of studies that whose authors reported prevalence rates of Asperger' s and found a wide range of rates. After conducting their review, the authors suggested using a rate of 2 per 10,000 until further research is conducted. Asperger's disorder is four times more prevalent in males than in females (Connor, 1999). Early childhood educators in general education classrooms often serve as the primary teacher of record, while working in collaboration with early childhood special educators and other professionals involved with the students who have Asperger's syndrome daily. Many of the students receive services in the classroom with special education teachers. Without the support, general education teachers may have difficulty working with students who have Asperger's syndrome. However, what is not obvious in the special education programs is the lack of knowledge and skills special education teachers have for working with students diagnosed with Asperger's syndrome. Asperger's syndrome is becoming more prominent in the general education settings, both special educators and general educators have the main responsibility to teach children with disabilities and recognize patterns of their strengths and weaknesses. Students with Asperger's could share classrooms with peers who may or may not have disabilities. Some Asperger's students are in the regular classroom for the majority of the day, while some may receive services in smaller groups for all or part of the day. In order to provide effective education for children with Asperger syndrome, it is essential to understand the nature of the impairments, the sources of the difficulties, and the areas of strength including the cognitive style. Research on teachers' knowledge of and attitudes toward Asperger's has been very limited. In a paper presented by Fondacaro (2001), teachers, administrators, and school staffs serving students diagnosed with Asperger's disorder were interviewed to determine which characteristics of the disorder affected school performance and which interventions have and have not been successful. Results indicated that teachers' acceptance of including a student with Asperger's disorder into the classroom was an important factor in the success of the student. Training also did not factor into which interventions were the most successful. The author suggests that teachers need not be trained specifically to work with children with Asperger's but they do need to be aware of the literature on the disorder, stressing the importance of teachers' knowledge in the delivery of education to these students. He also concludes that it may be beneficial to develop a questionnaire for teachers and other educational professionals who work with children with Asperger's disorder. This proposed questionnaire would be useful in assessing what teachers know, what they do not know, and what misconceptions they have about the disorder. Results could be used to direct in-servicing training, graduate and undergraduate teacher training programs, and in-school consultation.

Murphy (2005) developed the Knowledge of Asperger's Scale (KASP) to investigate teacher's knowledge about this disorder. Murphy's investigation appears to be the first of its kind to develop a knowledge scale and examine the knowledge of a sample of teachers. Results of this investigation indicated that teachers were lacking in their knowledge of Asperger's disorder. Specifically, of the sample of 147 teachers, 70.7% scored below 65% correct on the KASP. Correlations Between KASP Total Score and number of demographic variables such as (age, teacher experience, gender, teacher position, education level, teachers' level of professional development, and number of workshops attended) revealed different results as follows: (a) age was not significantly related to KASP total scores, (b) more years a teacher has taught a special education class (teacher experience), the more knowledge the teacher has about children with Asperger's disorder, (c) females obtained significantly higher scores on the KASP than males, (d) special education teachers (teacher position) possessed more knowledge about Asperger's than regular education teachers, (e) teachers with a bachelor's degree plus 30 credits (education level) scored significantly lower on the KASP than teachers with a master's degree or higher, (f) teachers who reported reading at least one article about Asperger's (teachers' level of professional development) had higher KASP scores than teachers who reported not having read any articles about Asperger's, and (g) teachers who have attended at least one workshop (number of workshops attended) had significantly higher KASP scores than teachers who did not attend workshops. His findings were in agreement with previous research on teacher's knowledge of other childhood disorders (Murphy, 2005). Murphy's findings support the view that there is a real need for training in childhood disorders, particularly

Asperger's disorder, in educational programs. In another study, (Nicol, 2008) tried to find out teachers knowledge about Asperger's Disorder and teachers' attitudes regarding children with Asperger's Disorder. He also examined the relationship between exposure to Asperger's Disorder and a teacher's level of knowledge about Asperger's Disorder. Results indicated that most teachers lack knowledge regarding how to teach a student with Asperger's Disorder as 86 of the 117 teachers had a low level of knowledge. Results also indicated that those who have taught a child with Asperger's Disorder had more knowledge (52.7%), on average, than those who have not (33.4%). Results based on gender and indicated that female teachers, on average, have a higher degree of knowledge regarding Asperger's Disorder (46.5% vs. 30.1%).

In a replication study, (Arechiga, 2009) used the Knowledge of Asperger's Scale (KASP) to assess general education high school teachers' knowledge of Asperger's across the three subscales of diagnostic criteria, general information, and intervention. Results of this replication study indicated that the general education high school teachers had a low level of knowledge regarding Asperger's Syndrome as measured by the KASP. The results of this study also indicated that exposure to someone with Asperger's Disorder is a significant factor with regard to a teacher's knowledge. Results also indicated that female teachers had a higher knowledge of Asperger's Disorder in comparison with male teachers. Cornelius (2010) examined the level of knowledge special education teachers have about students with Asperger's syndrome. The Knowledge of Asperger's Syndrome- Revised (KASP-revised) was used to assess teacher's knowledge of Asperger's syndrome. The results of this study indicated that the special education teachers who were sampled had a lower level of knowledge regarding Asperger's syndrome as measure by the KASP-revised. The results of this study also indicated that exposure to those with Asperger's syndrome was not a significant factor with regard to a teacher's knowledge about Asperger's syndrome. Finally, this study does not suggest that gender is a factor that really relates to one's knowledge about Asperger's syndrome. Also, there was not a correlation between the age of the participants and the score on the KASP questionnaires. Degrees held had a very small correlation, but not enough to say that it influenced the scores of the participants. According to Winter (2006), teachers believed they were not prepared to work with students with disabilities, and they wanted professional training and development courses so that they can learn new interventions and strategies to help them better work with students with disabilities. Educational programs will have to find a way now that additional information continues to become available to provide training and development for teachers who work with students with Asperger's syndrome.

Statement of the Problem

As the numbers of those diagnosed with AS becomes more prevalent, the number of students with AS attending public schools becomes more prevalent. With the prevalence of AS increasing, the chance that a teacher will have an AS student in the classroom also increases. Increasing research and literature shows that special education teachers lack skills and knowledge of Asperger's syndrome (AS) and how students with AS learn (Hersh and Walker, 1983).

Purpose of the Study

Asperger's syndrome is becoming more prominent in the general education settings, special education teachers have the main responsibility to teach children with disabilities and recognize patterns of their strengths and weaknesses. Prevalence estimates of Asperger's disorder have been increasing in recent years (Klin *et al.,* 2005). As a result, special education teachers need knowledge about the disorder and its associated characteristics to best meet their students' educational needs. Church *et al.* (2000) discovered that 21 out of 26 elementary aged students and 9 out of 13 middle school children with Asperger's were in either general education or inclusion classroom. This will highlight the need of all teachers, both regular education and special education, to understand all necessary facts about this disorder. The purpose of the study was to find out what special education teachers know about Asperger's syndrome, Educators' knowledge or lack of knowledge of Asperger's could greatly affect the students and the tools to provide an appropriate education for students with Asperger's. In addition, this study attempted to find out if there any significant differences in special education teachers' knowledge about (AS) depending on the variables; teacher gender (female or male), teacher education level (bachelor's degree and below or master's degree and above), teaching experience (less than 5 years, 5–10 years, more than 10 years), and level of professional development (workshops attended and articles read about AS) variables. Based on the reviewed literature, there are several research questions and about special education teachers' knowledge about (AS). Specifically, this study aimed to answer the following questions:

1. What level of knowledge do special education teachers possess about Asperger syndrome?
2. Are there any significant differences of special education teachers' knowledge about Asperger syndrome based on their gender, education level, teaching experience, and level of professional development variables?

MATERIALS AND METHODS

Research Design

This study utilized a quantitative descriptive survey research design to determine special education teachers' knowledge about Asperger Syndrome (AS) in both segregated and inclusive school sittings.

Population of Sample

Special education teachers working in both segregated and inclusive schools in (Riyadh, Al-Baha, Jeddah, and Al-Dammam) districts which considered as biggest cities in Saudi Arabia were invited to participate in this research study. Participating teachers were asked to complete the Knowledge of Asperger- revised Scale (KASP-Revised) to determine their level of knowledge about Asperger Syndrome. The researchers contacted the appropriate school administrators in the aforementioned cities to obtain permission to conduct this study. Initially, the scale was administered to 200 special education teachers; 185 of the study scales were completed and returned, 14 of which were excluded for providing incomplete information. Thus, the final sample consisted of 171 special

education teachers from various segregated and inclusive schools within the aforementioned cities in Saudi Arabia. The teachers were randomly selected from the study population. Table (1) provides the sample distribution according to the variables of the study: gender, education level, teaching experience, and level of professional development.

Table 1. Distribution of the Study Sample According to the Variables of the Study

Variable		Number	Total
Gender	Female	101	171
	Male	70	
Education Level	Bachelor or less	112	171
	Master's or above	59	
Teaching Experience	Less than 5 years	60	171
	5–10 years	48	
	More than 10 years	27	
professional development	Yes	77	171
	No	94	

Measures

The Knowledge of Asperger-revised (KASP-revised) is a revision of the Knowledge of Asperger (KASP) created by (Murphy, 2005). It was used to measure school teachers' knowledge of Asperger syndrome across three categories (i.e., diagnostic criteria and differential diagnosis, general information, suggested interventions). This scale consists of 34 items in which participants are asked to decide whether a statement is true, false, or to answer "don't know" if they are unsure. The KASP was developed with a sample of 147 teachers. Murphy (2005) reported that the KASP had good face validity, and good internal consistency for the total scale (0.91) and the three subscales, General Knowledge (0. 81), Intervention (0.80), and Symptoms (0.71). Murphy also found that the scale had good test-retest reliability (0.85). Construct validity was not established, but Murphy stated that this process was not conducted considering the lack of existing measures of knowledge of Asperger's disorder. The KASP was revised to focus more on specific inquiries. The (KASP-revised) focused on what special education teachers know about Asperger's syndrome. The subgroups mainly assessed and measured knowledge of general information about the characteristics of Asperger's syndrome and how those students with this disorder function. The KASP-revised also measured the knowledge of the interventions and strategies educators use with children with Asperger Syndrome. The revised scale in its final form consisted of 34 items for which the participants provide a (T) =True, (F) =False or (DK) =Do not know response. The face validity of the current study scale was verified by a group of professors (eight professors) trained in the field of special education that rated the clarity and appropriateness of the scale statements. Based on the group's observations and suggestions, necessary adjustments were made, and some phrases were reworded. After implementing the professors' suggestions, their percentage of agreement reached 87%. On the other hand, the reliability for the internal consistency of the study instrument was measured by Cronbach Alpha with a value reached (0. 89).

Data Collection Procedure

After contacting the appropriate school administrators of both segregated and inclusion schools to obtain permission to conduct this study, teachers were asked to completed the Knowledge of Asperger- revised Scale (KASP-Revised) to determine their level of knowledge about (AS). The Data collection for the study was conducted in the Spring of 2013.

Data Analysis Procedure

To answer the research questions, the data were analyzed using descriptive statistics for categorical data (i.e., means, standard deviations). Data were numerically coded and transferred to the statistical package for social science (SPSS) pack 20. The KASP-revised was divided into categories of True, False and Do Not Know. A true response was coded with a score of 1, a False response was coded with a score of 0, and a score of 0 was used for do not know. Teachers lake of knowledge was measured by the number of incorrect responses and don't know responses on the (KASP-revised). Responses of the study sample members were calculated by extracting the (percentage and mean) of the correct responses for each member of the sample on (KASP-revised) scale. If the mean of correct responses of a particular sample member were above (0.7), their knowledge about (AS) was considered 'Good'; If the mean ranged between (0.5 - 0.7), their knowledge about (AS) was considered 'Acceptable'; and if the mean was below (0.5), their knowledge about (AS) was considered 'Weak'. Higher mean scores indicated better knowledge about (AS), and lower mean scores indicated weaker knowledge about (AS). And finally, to measure the relationship between several independent variables (gender, education level, teaching experience, and level of professional development) and one dependent variable (teachers knowledge about AS), T-test and multivariate analysis (ANOVA) and Post hoc analysis (Scheffe) tests were used.

RESULTS

The first research question pertaining to this study aimed to find out what special education teachers know about Asperger Syndrome (AS). Teachers, level of knowledge were measured by The (KASP-revised) scale. Table 2 shows numbers and percentages of the correct answers that special education teachers have achieved on the (KASP-revised) scale. Here we notice that all correct answers on the study tool ranged between (42.1% - 84.8%). Items (31, 28, 27, and 30) were below (50%), and items (4, 26, 20, 13, 7, 18, 1, 11, 25, 9, and 34) were between (50% - 60%), and items (21, 24, 14, 22, 15, 8, 12, and 10) were between (60% - 70%), and items (2, 19, 5, 17, 6, 33, 29, 23, 32, 3, 16) were above (70%). This gives a hint around the moderate level of knowledge that special education teachers had about Asperger's Syndrome. Moreover, means and standard deviations for responses of teachers on each item of the scale and for the whole level of knowledge were extracted. Table 2 indicates that the mean ranged from (0.42–0.85), and the mean value of total level of knowledge that special education teachers had about Asperger Syndrome was (0.64) that lies between (0.5 - 0.7), which suggests that special education school teachers had an "acceptable" level of knowledge about the Asperger Syndrome. The second aim of this research was to investigate the potential differences in special education teachers' knowledge about Asperger Syndrome with respect to teachers' gender, education level, teaching experience, and level of professional development. To address this aim, two processes of analysis were implemented; initially, means, standard deviation, and results of T-test for the

Table 2. Mean, Std., Number, and percentage of correct answers for each item of the questionnaire for all Study Sample

Item N.	item	number	percentage	Mean	Std.
1	Research suggests that children with Asperger's should not be allowed to perseverate (e.g., a student who continually talks about cars despite the topic of a lesson) on their topic of interest in the classroom.	96	56.1	.56	.498
2	A student must have a significant delay in language development to meet the criteria for Asperger's Disorder.	123	71.9	.72	.451
3	Individualized Education Plans (IEP) that are similar are most beneficial for all children with Asperger's Disorder.	140	82.4	.82	.382
4	Children with Asperger's Disorder often do not follow directions because they want to be difficult.	87	50.9	.51	.501
5	Children with Asperger's Disorder typically do not have difficulty with changes in routine.	128	74.9	.75	.435
6	Children with Asperger's Disorder are typically intellectually disabled.	131	76.6	.77	.425
7	Asperger's appears to have a genetic component.	92	53.8	.54	.500
8	Research suggests that students with Asperger's would benefit from Group work with students who also possess social difficulties.	111	64.9	.65	.479
9	Areas of interest for children with Asperger's Disorder can change over time and be replaced with other areas of interest.	102	59.6	.60	.492
10	Children with Asperger's usually are not interested in friendships.	116	67.8	.68	.468
11	Most children with Asperger's Disorder usually have been given either diagnosis by the time they are diagnosed with Asperger's.	97	56.7	.57	.497
12	Children with Asperger's have the most difficulty behaviorally in unstructured settings such as physical education and recess.	112	65.5	.65	.477
13	According to research, a student with Asperger's may benefit from being exempt from working in groups.	91	53.2	.53	.500
14	Children with Asperger's Disorder usually have no regard for rules.	106	62.0	.62	.487
15	Asperger's children often dominate conversation with others.	107	62.6	.63	.485
16	In order to engage a child with Asperger's into class lessons, research suggests that teachers use the student's specific area of interest.	145	84.8	.85	.360
17	Children with Asperger's require additional preparation for changes in their routines.	130	76.0	.76	.428
18	Open-ended questions (free response, essays) are an effective way to evaluate a student with Asperger's.	92	53.8	.54	.500
19	In order to meet the criteria for Asperger's Disorder, a student must have impaired social skills.	126	73.7	.74	.442
20	Idioms ("don't hold your breath", "don't' jump the gun") should be avoided as children with Asperger's often take speech literally.	90	52.6	.53	.501
21	While having restricted areas of interest, these interests usually do not interfere with the student's ability to function.	104	60.8	.61	.490
22	Similar to Autistic Disorder, children with Asperger's Disorder have delays in language development.	107	62.6	.63	.485
23	The prognosis for children with Asperger's Disorder is better than it is for children with most types of autism.	139	81.3	.81	.391
24	Asperger's Disorder can be cured.	106	62.0	.62	.487
25	When children with Asperger's become defiant to rules, research suggests they be allowed to go to a "safe place" to calm down.	99	57.9	.58	.495
26	Research indicates that ignoring perseveration on the student's interest will decrease it.	89	52.0	.52	.501
27	Clumsiness is a criteria for a diagnosis of Asperger's Disorder.	81	47.4	.47	.501
28	Children cannot be diagnosed with both Autistic Disorder and Asperger's Disorder.	80	46.8	.47	.500
29	A student with Asperger's is able to learn some social skills from other students' social behaviors.	137	80.1	.80	.400
30	Over the last 10 years, diagnoses of children with Asperger's have not increased dramatically.	85	49.7	.50	.501
31	The obsessive interests commonly seen in Asperger's syndrome are unwanted and distressing to the child with Asperger's.	72	42.1	.42	.495
32	Asperger's s more commonly diagnosed in boys than girls.	138	80.7	.81	.396
33	Children with Asperger's disorder are typically not delayed cognitively.	131	76.6	.77	.425
34	Children with Asperger's have difficulty reading social cues.	102	59.6	.60	.492
	Total level of knowledge about (AS)			0.64	

Table 3. Means, Std., and Results of T-test for the teachers responses depending on (Gender, Education level, and professional development) variables

Variables			N	Mean	Std.	T	df	Sig.
Gender		Female	101	23.94	6.321	5.078	169	.000
		Male	70	18.33	8.111			
education level	Bachelor or less		112	17.88	6.369	12.207	169	.000
	Master's or above		59	28.80	3.537			
professional development		Yes	77	27.96	3.548	14.917	169	.000
		No	94	16.47	5.947			

teacher's responses depending on (gender, education level, and level of professional development) variables were extracted as shown in Table 3. As shown in Table 3, the mean scores differ based on the gender (male and female) of the respondent. The male group (n=70) had a mean of $\bar{x}$ = 18.33 and a standard deviation of σ = 8.111; the female group (n=101) had a mean of $\bar{x}$ = 23.94 and a standard deviation of σ = 6.321. A T-test between the means yielded t(169)= 5.078 at p= 0.000, for p ≥ 0.05. Thus, no significant differences were found in the means among the gender groups. These results indicate a statistically significant difference between the means of the male and female special education teachers groups, and that the female teachers group had a higher level of knowledge about the (AS) than male teachers group. For the second variable, differences in the mean scores were found based on the education level (Bachelor or less and Master's or above) groups, as shown in Table 3. The Bachelor or less group (n=112) had a mean score of $\bar{x}$ = 17.88 and a standard deviation of σ = 6.369; whereas, the Master's or above group (n=59) had a mean score of $\bar{x}$ = 28.80 and a standard deviation of σ = 3.537. A T-test between the means yielded t (169) = 12.207 at p= 0.000, for p ≥ 0.05. These results indicate a statistically significant difference between the means of the Bachelor or less and the Master's or above groups, and that the Master's or above group had a higher level of knowledge about the (AS) than Bachelor or less group.

Regarding the third varidable, as shown in Table 3, differences in the mean scores were found based on the professional development. Teachers who had a professional development in (AS) (n=77) had a mean score of $\bar{x}$ = 27.96 and a standard deviation of σ = 3.548; whereas Teachers who had no professional development in (AS) (n=94) had a mean score of $\bar{x}$ = 16.47 and a standard deviation of σ = 5.947. A T-test between the means yielded t(169)= 14.917at p= 0.000, for p ≥ 0.05. These results indicate a statistically significant difference between the means of the teachers who had a professional development in (AS) and the teachers who had no professional development in (AS). And that the teachers who had a professional development in (AS) group had a higher level of knowledge about the (AS) than those who had no professional development in (AS). For the purpose of investigating the potential differences in special education teachers' knowledge about the (AS) with respect to teachers' teaching experience, another processes of analysis were implemented. As shown in Table 4, differences in the mean scores were found.

Teachers with (< 5) years of experience (n=60) had a mean score of $\bar{x}$ = 19.63 and a standard deviation of σ = 7.353; and teachers with (5-10) years of experience (n=84) had a mean score of $\bar{x}$ = 20.85 and a standard deviation of σ = 7.483; and teachers with (>10) years of experience (n=27) had a mean score of $\bar{x}$ = 28.59 and a standard deviation of σ = 3.925. An ANOVA test between the means yielded (F=16.314) at p = 0.000, for p < 0.05. These results indicate a statistically significant difference between the means of the different teachers' Experience level groups. In addition, A Scheffé post hoc test was conducted for the comparisons between different teachers' Experience level groups as shown in Table 5. Results indicated that teachers with (>10) years of experience had higher level of knowledge about (AS) in comparison with teachers with (< 5) years of experience (mean difference = 8.96 at p= 0.000), and teachers with (>10) years of experience had higher level of knowledge about (AS) in comparison with teachers with (5-10) years of experience (mean difference = 7.75 at p= 0.000).

DISCUSSION

The purpose of the study was to find out what special education teachers know about Asperger Syndrome. In addition, this study attempted to find out if there any significant differences in special education teachers' knowledge about (AS) depending on the variables; teacher gender, teacher education level, teaching experience, and professional development variables. The first research question indicated a moderate level of knowledge that special education teachers had about (AS), as the mean value of total level of knowledge that special education teachers had about (AS) was (0.64) and lied between (0.5 - 0.7), which suggests that special education school teachers had an acceptable level of knowledge about the (AS). This result may be related to the awareness of Autism Spectrum Disorders through attending seminars, conferences, workshops, and the availability of books about autism and pervasive developmental disorders in libraries. In addition, the result is attributed to diagnose many cases of AS and integrated them into specialized centers of autism. On the other hand, because there is a considerable overlap between the characteristics of children with autism and children with (AS), usually this confuses specialists among those characteristics. This in turn requires the so-called "differential diagnosis". This is the reason for reservations of some researchers regarding the medium level of knowledge for

Table 4. Means, Std., and Results of analysis of variance (ANOVA) for the teachers responses depending on (Experience) variable

Variable		N	Mean	Std.		Sum of squares	df	Mean squares
Experience	< 5	60	19.63	7.353	Between G.	1599.800	2	799.900
	5–10	84	20.85	7.483	Within G.	8237.440	168	49.032
	> 10	27	28.59	3.925	Total	9837.240	170	

Table 5. Post Hoc Analysis (Scheffe test) for the teachers responses depending on (Experience) variables

Variables				
Experience		Mean Difference	Std. Error	Sig
Less than 5 years	5–10 years	1.21	.972	.259
	More than 10 years	8.96*	1.040	.000
5–10 years	Less than 5 years	-1.21	.972	.259
	More than 10 years	7.75*	1.010	.027
More than 10 years	Less than 5 years	8.96*	1.040	.000
	5–10 years	-7.75*	1.010	.027

teachers about (AS), where the diagnosis of these children needs high and advanced knowledge about the characteristics of children with(AS). This result is not consistent with (Arechiga, 2009; Cornelius, 2010; Murphy, 2005; and Nicol, 2008) studies, which indicated that teachers were lacking in their knowledge of Asperger's Syndrome. As a result, it has become necessary to ensure special education teachers are well prepared and have good skills and competences knowledge to accurately diagnose Asperger's Syndrome and differentiate it from other disorders, and to be well prepared how to deal with students with Asperger's Syndrome. Results of the second study objective aimed to find out if there any significant differences in special education teachers' knowledge about (AS) depending on the variables; teacher gender, teacher education level, teaching experience, and professional development variables. These results indicated that female special education teachers had a higher level of knowledge about (AS) than male special education teachers.

This result may be related to fact that teachers who work with younger children have more knowledge of (AS), since the female teachers are often work with young children in the early intervention, so they are more knowledge than male teachers about (AS). This result was confirmed by Nicol (2008) study, indicated that pre- school teachers have the most knowledge regarding (AS). This finding is also in agreement with studies conducted by (Arechiga, 2009; Murphy, 2005; and Nicol, 2008) which indicated that female teachers have a higher degree of knowledge regarding (AS). In contrast, this result disagreed with a study conducted by Cornelius (2010) in which the gender was not a factor relates to one's knowledge about (AS). Regarding the teacher education level variable, results indicated that teachers with Master's degree or above had higher level of knowledge about (AS) in comparison with teachers with Bachelor degree or below. Teachers with advanced education levels like those with Master's degree may have received more advanced courses in the field of special education. Teaching in the Master's stage or above is usually more comprehensive and deeper than teaching in the Bachelor stage or below.

Moreover, teaching methods might be different and depend on research and scientific investigation, which increases the level of teachers' knowledge about this topic. This finding is in agreement with (Murphy, 2005) study, indicated that teachers with Bachelor's degree had lower level of knowledge than teachers who had Master's degree. With regard to teaching experience variable, findings indicated that teachers with (>10) years of experience had higher level of knowledge about (AS) in comparison with teachers with (< 5) years and (5-10) years of experience. This result related to fact that teachers with more years of experience have more knowledge because the information which they received in undergraduate study period are in sufficient and very limited about (AS), so they acquired knowledge after employment then they attended workshops, seminars, and conferences. This finding was confirmed by Murphy (2005) study, indicated that teachers with more years experience had more knowledge about children with (AS). Finally, regarding level of professional development (workshops attended and articles read about AS) variable, results indicated that teachers who had a previous professional development had higher level of knowledge about (AS) in comparison with teachers who had no previous professional development in the (AS) field. It is a logical result, teachers who had previously deal with students with (AS) through their learning and training, or that they had received courses or attended workshops and training sessions in the (AS) field, it would be necessarily that they have a more advanced level of knowledge than those who do not did exposed to such experiences. This result was confirmed by Murphy (2005) study indicated that teaches who reported reading at least one article about (AS) had higher knowledge about (AS) and teachers who have attended at least one workshop had significantly higher (KASP) scores than teachers who did not attend workshops. This finding is also in agreement with Winter (2006) study, indicated that teachers need professional training and development courses to learn new intervention and strategies to help them better work with students with disabilities.

Conclusion

The information discussed thus far leads to the following conclusions; special education teachers have relatively moderate level of knowledge about Asperger Syndrome. As we discussed before, this finding support the importance of professional development, and training of special education teachers about the characteristics of students with Asperger Syndrome. Different variables such as teachers' (gender, education level, teaching experience, and professional development) were found to have a significant direct effect on the level of special education teachers' knowledge about the (AS). special education teachers who serve students with (AS) in inclusive sittings usually face a wide array of characteristics and qualifications. All School teachers, regardless of specific qualifications, should receive training in educational practices needed to effectively serve this group of students. Special education teacher programs are sorely in need of more special education classes regarding children with Asperger Syndrome as its focus.

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