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Prevalence of Attention Deficit and Hyperactivity Disorder in Children with Language Impairments and Speech Disorders

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ABSTRACT

The purpose of the study was to identify the prevalence of attention deficit and hyperactivity disorders in children with language impairment and speech disorder. The study adopted a descriptive survey research design. The population of the study was 30 pupils suffering from speech and language disorders. The instrument used for the study was ADHD scale designed by the researcher, which was face and content validated by three experts. Cronbach Alpha reliability method was adopted to determine the internal consistency of the instrument, which yielded a reliability coefficient of 0.86. The data collected were analyzed using frequencies and percentage. Result revealed that the prevalence of ADHD disorders generally is 46.7%, the most ADHD disorders syndromes prevalent among children with language and speech disorder are: fidget and squirm in his seat, a constant siting of readiness to go, acting before thinking, interfere in the affairs of others, weak concentration, short term for attention and easy dispersion of attention.

Keywords: Attention Deficit, Hyperactivity Disorder, Language Impairment, Speech Disorder

I. INTRODUCTION

When a person is unable to produce speech sounds correctly or fluently, or has problems with his or her voice, then he or she has a speech disorder. Difficulties pronouncing sounds, or articulation disorders, and stuttering are examples of speech disorders. When a person has trouble understanding others **(**receptive language**),** or sharing thoughts, ideas, and feelings completely **(**expressive language**),** then he or she has a language disorder**.** A stroke can result in aphasia, or a language disorder. Both children and adults can have speech and language disorders. They can occur because of a medical problem or have no known cause. Many speech–language clinicians working with children will experience a caseload in which children exhibit combinations of speech disorders (SD), language impairment (LI), and reading disorder (RD). Numerous studies have shown RD to be substantially elevated among children with LI. (Tomblin, & Mueller. 2012). Likewise, poor readers are likely to have poor language abilities, Speech disorders and LI are found together as are SD and RD. It has recently been shown that co-occurrence of the latter two disorders is in fact due to the elevated rate of LI among children with SD, a finding that points to the complexity of the relationship between these disorders. (Pennington & Bishop, 2009).

The child with delayed language skills or with difficulties in language needs to be seen by a speech-language pathologist (SLP). The SLP will assess the child to obtain a clear idea of the child's strengths and weaknesses in language. An intervention program will be planned accordingly and areas of deficit will be targeted in therapy. Liaison with parents and schoolteachers is indicated in order to achieve the child's maximum potential. (O'Regan, 2002).

Attention-Deficit/Hyperactivity Disorder (ADHD) is a neurodevelopmental disorder characterized by three primary symptoms: short and inconsistent attention span, impulsive behavior, and hyperactivity. ADHD affects approximately 3%–7% of children in the United States with a male/female ratio of about two to one. There are three subtypes of ADHD: A) ADHD predominantly inattentive type. B) ADHD predominantly hyperactive-

impulsive type and. C) ADHD combined type (Joseph & Charles 2015).

In addition Joseph &Charles (2015) show that parents of children with ADHD frequently notice that their child has consistent difficulty with:

- Paying attention while following instructions, especially during rote or routine tasks;
- Returning to tasks once they have been distracted;
- Paying attention to details and completing assignments;
- Considering multiple options and consequences before acting;
- Pacing, fidgeting and squirming in their seat;
- Talking excessively without considering the needs of the listener;
- Controlling aggressive or defiant behavior.

It is not uncommon to find that children with LI, SD, or RD are also being treated for attention deficit/ hyperactivity disorder (ADHD). This phenomenon occurs so frequently it has led to a general acceptance of the overlap between communication disorders and behavior disorders. (Tomblin, & Mueller. 2012) Investigations of the relationship between ADHD and language disorders have provided varying results. Some reports have indicated that children with ADHD have difficulties with expressive rather than receptive language, particularly when language output is required to be organized. (Barkley, 1990). Some studies have shown that language disorders in general are associated with children suffering from the inattentive subtype of ADHD rather than the hyperactive subtype (Shaywitz et al., 1994). Whereas others have suggested that deficits in working memory and executive functions negatively influence language abilities (Witton et al., 1998). Despite the disagreement over the relationship of language disorders to ADHD, clinicians, teachers, and parents agree that many children with ADHD seem to have language difficulties. Speech and language difficulties can co-exist with ADHD. ADHD can create problems in accessing and using language appropriately. Language is not the root of the problem. The difficulties in language are secondary to the attention difficulties. ADHD can affect short-term memory and working memory and these both have an influence on language and learning skills in general. ADHD can affect sequencing skills and the ability to understand or explain concepts. Semantic skills such as using vocabulary and retrieving words from memory can also be affected. ADHD can also effect pragmatic skills; including having a conversation, maintaining a topic, taking turns and keeping eye contact. (O'Regan, 2002).

Language impairment (LI) and attention-deficit/hyperactivity disorder (ADHD) are two relatively common developmental disorders that have been shown to have high rates of co-occurrence in a number of studies. Study conducted by Redmond, Ash, & Hogan, (2015) aimed to examine in more detail the clinical phenomenology of co-occurring ADHD and language impairments (LIs).The results were: ADHD status had no independent detrimental impact on the affected children's LIs. A modest positive correlation was found between the severity of children's ADHD symptoms and their sentence recall performance, suggesting a tendency for affected children who had higher levels of ADHD symptoms to perform better than those children with lower levels did. Likewise, Lewis & et al (2012) conducted study to examine the association of speech-sound disorders (SSD) with symptoms of attention-deficit/hyperactivity disorder (ADHD). Results show that children with moderate-severe SSD had higher ratings on the inattention and hyperactive/impulsivity scales than children with no SSD. Study of Ebert, & Kohnert, (2011) this study provides a meta-analysis of the difference between children with primary or specific language impairment (LI) and their typically developing peers on tasks of sustained attention. Results show that the meta-analysis supports the existence of sustained attention deficits in children with LI in both auditory and visual modalities, as demonstrated by reduced accuracy compared with typically developing peers. Study of McGrath, Hutaff-Lee, Ashley, Shriberg, & Pennington, (2008) focuses on the comorbidity between attention-deficit/hyperactivity disorder (ADHD) symptoms and speech sound disorder (SSD). SSD is a developmental disorder characterized by speech production errors that influence intelligibility. Results indicated that participants in the SSD + SLI group had higher rates of inattentive ADHD symptoms than those in the SSD-only and control groups. In addition, an unexpected interaction emerged such that children with SLI and normalized-SSD had significantly higher ADHD inattentive ratings than the other subgroups. A proposed explanation for this interaction is discussed. Study conducted by Ilija, Berdj, christel & reborta (2001) found that relationship between attention deficit-

hyperactivity disorder (ADHD) and speech/language disorders. Cantwell & Baker (1991) discusses the relationship between attention deficit-hyperactivity disorder (ADHD) and learning disability (LD). The data show an increased prevalence of both LD and ADHD among children with early speech/language impairments**.** Study conducted by Tallal & et al (1991) found that SLI children who had at least one impaired parent had more attention/hyperactivity problems as rated by parents and teacher. Study conducted by Beitchman & et al (1996) to ascertained 142 children with speech and/or language impairments in kindergarten and matched them with controls on age, gender, and classroom/school. Teacher report at this time showed elevated rates of hyperactivity among the speech/language impaired group compared to controls. Additionally Beitchman & et al (2001) in another study found that Psychiatric evaluation of a subset of the sample indicated that 30.4% of children in the speech-language impaired (SD/LI) group had ADHD. Baker & Cantwell conducted study (1987) they reported the rate of ADHD in children with LI to be 16% at the time of the initial study. When this sample was reviewed five years, later this figure had more than doubled, rising to 37%. Study carry out by Benaisch et al. (1989) reported that the rate of psychopathology in children who were speech/language versus a typically developing control group. The most prominent psychopathology was ADHD, which occurred in 18% of the SLI children and was not observed in the controls. Study conducted by Safaa, Ahlam, Eman & Abdelrahim, (2013) found that the most common psychiatric diagnosis among children with Li is attention deficit hyperactivity disorder (ADHD), and conversely, Li is a frequent comorbidity found in children with ADHD. Study conducted by Sean & et al (2015) indicated that ADHD status had no independent detrimental impact on the affected children LIs. A modest positive correlation was found between the severity of children's ADHD symptoms and LIs. Study conducted by Donaher & Richels (2012) found that For this sample 58% of the participants met criteria for needing referral for additional evaluation for symptoms related to ADHD. A strong positive relation was found between a reported family history of recovered stuttering and the presence of a concomitant diagnosis. Study conducted by Ulrike & et al (2003) found that thirty-two children (34%) with language and speech disorder showed behavioural problems in the clinical range, like social problems, anxious–depressed, thought problems, attention problems, and delinquent problems. Study conducted by Tony & et al (2015) found that both language impairment and ASD groups showed similarly elevated levels of emotional, conduct and hyperactivity problems. The only differences between the LI and ASD groups were on subscales assessing peer problems (which were higher in the ASD group) and prosaically behaviours (which were higher in the LI group). Overall, there were few associations between emotional and behavioural problems and child characteristics, reflecting the pervasive nature of these difficulties in children with LI and children with ASD, although levels of problems were higher in children with ASD with lower language ability. However, in the ASD group only, a measure of family social economic status was associated with language ability and attenuated the association between language ability and emotional and behavioural problems. Study conducted by Cross (2011) reported a substantial degree of overlap between language impairments and behavioural problems. Hartas (2012) found that children with language impairments frequently experience behavioural problems, and conversely, many children with behavioural problems show language impairments

Aims of the study

The aims of this study were to:

1- Identify the prevalence of attention deficit and hyperactivity disorder in children with speech and language disorders in Sudan.
2- Identify the syndrome of attention deficit disorder among children with language and speech disorder.
3- Verify the relationship between ADHD and speech and language disorders.

Question of the study

1- What are syndromes of hyperactivity disorder among children Language and speech disorder?
2- What are syndrome of impulsivity disorder among children language and speech disorder?
3- What are syndrome of attention deficit disorder among children with language and speech disorder?
4- What is prevalence of attention deficit and hyperactivity disorders among children with language and speech disorder?

II. METHODS AND MATERIAL

Methods

The study was carried out in basic school in Khartoum, capital of Sudan. The study adopted a descriptive method.

Population and sample

The population of the study was 60 children suffering from speech and language disorders in Manar speech disorders center. The researcher chosen 30 children randomly from study group as a study sample.

Instruments:

ADHD scale containing 36 items developed by the researcher from literature reviewed was used for data collection. The scale was divided into three sections, A, B AND C, A was designed to obtain hyperactivity disorder, B was designed to obtain impulsivity disorder, and C was designed to obtain attention deficit disorder.

Validity and Reliability

The instrument was face and content validated by three experts from Special Education Department in University of Jazan. Cronbach's Alpha reliability method was adopted to determine the internal consistency of the instrument. A reliability coefficient of 0.89 was obtained.

Practical Procedures

The researcher with the help of three research assistants administered the scale. The respondents were allowed a period of three weeks, after which the researcher and the research assistants went round to collect the scale items for analysis. The data collected was analyzed using frequency, percentage, and Cronbach's Alpha.

III. RESULTS AND DISCUSSION

Question1 what are syndromes of hyperactivity disorder among children Language and speech disorder?

To answer this question the researcher used percentage, table 1 shows the syndrome of hyperactivity.

Table 1: Shows syndrome of hyperactivity disorder among language and speech disorder children**.**

Syndromes	F	Percent	Rank
Fidget and squirm in his seat	20	66.7%	1
A constant siting of readiness to go	16	53.3%	2
Shows movements which express the distress	14	46.7%	3
Speaks loudly	14	46.7%	3
Unable to stay in the seat for a long time	14	46.7%	3
Always manipulated the things	12	40%	6
Easy arousal	12	40%	6
Hyper running and jump	12	40%	6
Moving a lot	12	40%	6
The inability to play softly	12	40%	6
Move the body nervously	10	33.3%	11
Taking things strongly	10	33.3%	11
Talking too much	10	33.3%	11

F= Frequency Total number is 30

As you see in table 1, you found that all syndromes have percent over 33%; five hyperactivity syndromes have percent over 45%. This means that that the most hyperactivity disorder syndromes prevalent among children with language and speech disorder are: fidget and squirm in his seat 66.7%, a constant siting of readiness to go 53.3%, shows movements which express the distress 46.7%, speaks loudly 46.7% and unable to stay in the seat for a long time 46.7%.

The finding revealed that the most hyperactivity disorders syndromes prevalent among children with language and speech disorder are: fidget and squirm in his seat, a constant siting of readiness to go, shows movements which express the distress, speaks loudly and unable to stay in the seat for a long time. This result is in line with study result of Lewis & et al (2012) they showed that children with moderate-severe speech and language disorders had higher ratings on the inattention and hyperactive/impulsivity scales than children with no SLD. Additionally the this result is in line with the result study conducted by Cantwell & Baker (1991) which showed that an increased prevalence of ADHD among

children with early speech/language impairments**.** Safaa, Ahlam, Eman & Abdelrahim, (2013) found that the most common psychiatric diagnosis among children with Li is attention deficit hyperactivity disorder (ADHD). Tony & et al (2015) found that language impairment showed elevated levels of emotional, conduct and hyperactivity problems.

Question 2: What are syndrome of impulsivity disorder among children language and speech disorder?

To answer this question the researcher used percentage, table 2 shows the syndrome of impulsivity disorder.

Table 2: Shows syndrome of impulsivity disorder among children with language and speech disorder**.**

Syndromes	F	Percent	Rank
Acting before thinking	22	73.3%	1
Interfere in the affairs of others	18	60%	2
Moving from one activity to another before completing the first activity	14	46.7%	3
Unable to wait until others role ending	14	46.7%	3
Unable to wait for the issuance of instructions	14	46.7%	3
Interrupt others talk	12	40%	6
Fails to follow the rules of the game	12	40%	6
Speed to answering	10	33.3%	8
Always rushing	10	33.3%	8
Find it difficult to wait for his role	8	26.7%	10

F= Frequency Total number is 30

As you see in table 2, you found that all syndromes have percent over 33%; five impulsivity disorder syndromes have percent over 45%. This means that the most impulsivity disorder syndromes prevalent among children with language and speech disorder are: acting before thinking 73.3%, interfere in the affairs of others 60%, moving from one activity to another before completing the first activity 46.7%, unable to wait until others role ending 46.7% and unable to wait for the issuance of instructions 46.7%.

The finding revealed that the most impulsivity disorder syndromes prevalent among children with language and speech disorder are: acting before thinking, interfere in the affairs of others, moving from one activity to another before completing the first activity, unable to wait until others role ending and unable to wait for the issuance of instructions. This result is in line with result of study conducted by Ash, & Hogan, (2015); the researchers indicate that ADHD status had no independent detrimental impact on the affected children's language impairment.

Question 3: What are syndrome of attention deficit disorder among children with language and speech disorder?

To answer this question the researcher used percentage, table 3 shows the syndrome of attention deficit disorder.

Table 3. Shows syndrome of attention deficit disorder among children with language and speech disorder**.**

Syndromes	F	Percent	Rank
Weak concentration	24	80%	1
Short Term for attention	22	73.3%	2
Easy dispersion of attention	22	73.3%	2
Find it difficult to continue to pay attention and continuity	22	73.3%	2
Failure to end the tasks	18	60%	5
Weakness in planning ability	16	53.3%	6
Oblivious	16	53.3%	6
Not paying attention.	16	53.3%	6
Difficulty to following the instructions	16	53.3%	6
Find it difficult to continue in task	12	40%	10
Find it difficult to complete tasks	10	33.3%	11
Not organized	8	26.7%	12
Always lost personal belongings	8	26.7%	12

F= Frequency Total number is 30

As you see in table 3, you found that all syndromes have percent over 25%; nine attention deficit syndromes have percent over 50%. This means that that the most attention deficit disorder syndromes prevalent among children with language and speech disorder are: weak concentration 80%, short term for attention 73.3%, easy dispersion of attention 73.3%, find it difficult to continue to pay attention and continuity 73.3%, failure to end the tasks 60%, weakness in planning ability 53.3%, oblivious 53.3%, not paying attention 53.3% and difficulty to following the instructions 53.3%.

The finding revealed that the most attention deficit disorder syndromes prevalent among children with language and speech disorder are: weak concentration, short term for attention, easy dispersion of attention, find it difficult to continue to pay attention and continuity, failure to end the tasks, weakness in planning ability, oblivious, not paying attention and difficulty to following the instructions. This result in line with study of Ebert, & Kohnert, (2011) it showed that the meta-analysis supports the existence of sustained attention deficits in children with speech and language disorders. Safaa, & et al, (2013) found that the most common psychiatric diagnosis among children with Li is attention deficit hyperactivity disorder (ADHD). Ulrike & et al (2003) found that thirty-two children (34%) with language and speech disorder showed behavioral problems one of those problems is attention problems.

Question 4: What is prevalence of attention deficit and hyperactivity disorders among children with language and speech disorder?

To answer this question the researcher used percentages. Table 4 shows the prevalence of ADHD in children with language and speech disorder.

Table 4: Shows prevalence of attention deficit and hyperactivity disorders among children with language and speech disorder.

N	Syndromes	Frequency	Percent
1	Hyperactivity disorder	14	46.7%
2	Impulsivity	12	40%
3	Attention deficit	16	53.3%
	ADHD in general	14	46.7%

As in table 4, the data shows that the prevalence of ADHD among children with language and speech disorder is 46.7%. In addition, the data shows that the prevalence of hyperactivity disorder is 46.7%, impulsivity disorder is 40%, and attention disorder is 53.3%. This means that the more symptoms of ADHD disorder prevalent in children with language and speech disorder is attention deficit with 53.3%, then hyperactivity disorder with 47.7% and the last impulsivity with 40%. Finally, the prevalence of ADHD disorders generally is 46.7%.

The study indicated that the prevalence of ADHD disorders generally is 46.7% and the more symptoms of ADHD disorder prevalent in children with language and speech disorder is attention deficit, then hyperactivity disorder with and the last impulsivity. This result is in line with study result of Study Beitchman and et al (1996), they indicate that teacher report at this time showed elevated rates of hyperactivity among the speech/language impaired group compared to controls. In addition, Beitchman and et al (2001) found that Psychiatric evaluation of a subset of the sample indicated that 30.4% of children in the speech-language impaired (SD/LI) group had ADHD. Baker & Cantwell conducted study (1987) they reported the rate of ADHD in children with LI to be 37%. Benaisch et al. (1989) reported that the rate of ADHD, which occurred in 18% of the Speech and language impaired children and was not observed in the controls. The researcher pointed that we see was seems to be elevated rates of ADHD in the small number of studies where the sampling began with children who were Language and speech impaired, this result let us to conduct more study about how to treatment the ADHD in children with speech and language disorders.

Generally there are many studies pointed that there are relationship between ADHD and SLD. Ashley, Shriberg, & Pennington, (2008) indicated that participants in the SLD group had higher rates of inattentive ADHD symptoms than those had less rates SLD. In addition, an unexpected interaction emerged such that children with SLD had significantly higher ADHD inattentive ratings than the other subgroups. In Tomblin, & Mueller (2012) Investigations of the relationship between ADHD and language disorders have provided varying results. Ilija, Berdj, christel & reborta (2001) found that relationship between attention deficit-hyperactivity disorder (ADHD) and speech/language disorders. Tallal & et al (1991) found that SLI children who had at least one impaired parent had more attention/hyperactivity problems as rated by parents and teacher.

IV. CONCLUSION

This study conducted to know the prevalent of ADHD in children with speech and language disorders, it revealed that:

-The most hyperactivity disorders syndromes prevalent among children with language and speech disorder are: fidget and squirm in his seat, a constant siting of readiness to go, shows movements which express the distress, speaks loudly and unable to stay in the seat for a long time.

-The most attention deficit disorder syndromes prevalent among children with language and speech disorder are: weak concentration, short term for attention, easy dispersion of attention, find it difficult to continue to pay attention and continuity, failure to end the tasks, weakness in planning ability, oblivious, not paying attention and difficulty to following the instructions.

-The prevalence of ADHD disorders generally is 46.7% and the more symptoms of ADHD disorder prevalent in children with language and speech disorder is attention deficit, then hyperactivity disorder with and the last impulsivity.

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