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# Behavioural patterns and factors responsible for student's attention deficit hyperactivity disorder (adhd) in ikwerre local government area of Rivers State, Nigeria: An implication for instructional designer

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**Abstract**
The study investigated behavioural patterns and factors responsible for students attention deficit hyperactivity disorder (ADHD) in Ikwerre Local Government Area (LGA) of Rivers State (R/S), Nigeria: An implication for instructional designer. The researchers espoused descriptive research design. The study had three (3) purpose of study, three (3) research questions in addition to two (2) hypothesis. The population encompassed of 13,950 senior secondary school (SSS) students in the thirteen (13) public SSSs in the LGA under study. Taro Yamen's formula for determination of sample size stood espoused to acquire a target population of 400 as sample size with the assistance of the stratified random sampling technique (SRST). The SNAPIV ADHD rating scale as well as DBDRS established by Swansen Nolan and Pelham stood espoused as research instrument retitled as characteristics behavior as well as factors accountable for attention deficit hyperactivity disorder questionnaire (CBFRADHDQ). The instrument remained validated by specialists in the area of measurement and evaluation. The reliability coefficient value of 0.65 to 0.92 was established through Pearson's Product Moment Correlation co-efficient (PPMCC). The data was analyzed through mean plus standard deviation for the research questions then t-test for the hypothesis. The study found that the factors accountable for ADHD ranged from nature to nurture, genetic/neurological factors and environmental factors amid others. It was also confirmed that there is a significant difference in the behavioral patterns of ADHD based on school location and there was no significant difference in the factors accountable for ADHD based on sex. The following recommendations were made amid others. Instructional designers should be engaged in instructional resource centres in rual and urban schools to identify appropriate learning approaches and design for differentiated instruction for ADHD to benefit maximally from teaching-process. School health programmes should be conducted from time to time to offer veritable avenue for the identification of ADHD.

**Keywords:** Behavioural, ADHD, instructional, factors

## 1. Introduction
Education constitutes the overall development of the worth of an individual in specific and the society in general. Through education an individual is prepared for useful living, sound, effective and integrated into the society. Education moulds the child or learner into appropriate desirable behaviour. It is on this premise that education focuses on the learner to be physically, emotionally an all Round readiness to learn with good and sound frame of mind. It also means that for learners to achieve the school should provide an enabling learning environment that will cater for all learners in an inclusive education with the aim of attending to different special needs of the learners in order to reduce and manage learning disabilities of the learners. Learning disabilities is a problem that impedes learning at all levels and then affects their schooling and adjustment to society (Lerner, 2011). The National Joint Committee on Learning Disabilities (NJCLD, 1998) and Interagency Committee on Learning Disabilities (ICLD, 1994) identified a learner with disability on the ground that an evaluation team discovered a server discrepancy between the student achievement and intellectual ability in one or more of several areas, such as oral expression, listening comprehension, writing expression, basic reading skills, reading comprehension, mathematics, calculation and reasoning. The learning disabilities according to NNCMH, 2009 stated that it affects people from different stages of life, such as pre-schoolers, elementary-age scholars, adolescents and adults' manifest different problems and characteristics yet no individual will exhibit all characteristics. From the ongoing, it has been observed that the age range has expanded over the years and each age group requires different interventions and teaching approaches since certain disabilities are more prevalent than others at particular ages. It has been observed from researches that there are as many girls with learning disabilities as there are boys (NIMH, 2008). Learner 1993 commenting on learning disability stated that the notion of multiple intelligences suggests that scholars with learning disabilities have other kinds of intelligences not recognized by schools. The percentage of children with learning disabilities in school are 5.6 percent for ages 6 and 2`1. More scholars are presently classified as having learning disabilities as well as adolescents and adults in the society. Larry 1999 stated that twenty percent (20%) of children with disabilities also have Attention Deficit Hyperactive Disorder (ADHD). The ADHD is conceived as a state of the brain which makes it problematic for teenagers to regulate their conduct in school as well as in social settings. It remains an utmost typical prolonged conditions of

childhood, which in addition affects amid 4-12 percentages of wholly school age teenagers. Agomoh 2011 opined that the case of ADHD is approximately three stretches more of males compared to females diagnosed. For such diagnosed cases the children exhibit certain behavioral patterns. Behavioral pattern is the specific ways an organism behaves that makes it distinct from other organisms. According to English Dictionary, Behavioral pattern is a persistent approach of display by a teenager or group towards a specified item or in a certain siting. ADHD exhibit the following behavioral patterns: forget home-assignment, reverie throughout lesson, act lacking rational reasoning, acquire twitchy at banquet tabletop. Thus other indications as in attention, impulsivity and hyperactivity are not in exception. The ADHD can pose problems at home and school, based on this some learners are referred to psychological health specialists. While it is considered as most prevalent problems of childhood, Grant 1995 stated that the number of expert view remains that roughly three to five percentage of teenagers have ADHD which in addition transforms into about two million school age youngsters. This disorder can be modified through education in general and instructional designer in particular by providing learning techniques that can serve as behavioral therapy and designing for differentiated instruction for ADHD to benefit maximally from the instructional process. An instructional designer is a professional that is concern with the systematic development of instruction through the methodology of interpretation of learning necessities, expansion of transfer system to meet those necessities based on predetermined objectives. It is on this proposition that the researchers are propelled in investigating the behavioral patterns and factors responsible for ADHD amid secondary school students in Ikwerre LGA of R/S.

**Statement of the Problem**

Learners are always active, they try to get ready whenever they are learning. One of the elements which exerts considerable influence on their academic performance as well as the magnitude of their motivation remains ADHD. This de-habilitating neurobiological disorder impacts youngster's capability to concentrate as well as regulate his behavior contributing expressively to the youngster's day-to-day improvement plus his achievement in the classroom as such school factually becomes a loaded deck for the youngster with ADHD. The council for exceptional youngsters designates that virtually ten percent of school-aged youngsters struggle with ADHD. The majority of these scholars similarly have specific variety of academic learning incapacity. So their incapability to sit tight in class is complicated by their difficulty in grasping the outlines of the curriculum; which is pertinent to curriculum planners and instructional designers. Thus, it has remained detected that youngsters with ADHD tend to fool at a proportion of 250 percent greater than their peers deprived of ADHD, also practically half of them will be under obligation to repeat a class. The frustration these ADHD learners face is exacerbated by the fact that the skills that they lack are precisely the skills they need to excel academically in school, as such the ADHD children are often exceedingly bright, but unaware of the inconsistency amid their potential in addition to their academic performance. Bynum (2002) commenting on ADHD traced the nature and nurture theory to a psychologist Francis Galton (1869), who referred to biological and genetic constitution to impact on human traits and influences from ones environment which interferes with human proper development. There could be other related factors that actually exist. Thus the research is to consider the teachers perception of the characteristic behaviour and factors accountable for ADHD amid students in a particular LGA, in which the result will act as an implication for curriculum planners, instructional designers and special needs education.

**1.2 Significance of the Study**

The outcome of our study will be of immense assistance to the special needs child with ADHD, government, parents, school administrators/proprietors, as well as secondary school teachers in both special, general and inclusive schools. It will guide the special needs educator as baseline information which will help him develop better approaches to handle scholars based on identified factors. The result will guide the government to guarantee the operationalization of the objectives of national policy on education for exceptional children or children with special needs by supplying or providing the available statistics needed. It will encourage proprietors to use the information obtained from the research to map out ways of tackling the learning disorder associated with ADHD. Policies will be formulated based on the result obtained on the understanding, management and integration of such individuals in the society. The result will enhance curriculum planners and instructional designers on the content of the curriculum and instructional materials that can be utilized in teaching and learning of ADHD scholars. The information contained in this study will act as a reference material for future researchers.

**1.3 Purpose of the Study**

The purpose of the study is to investigate the behavioral patterns and factors accountable for student's ADHD. In precise terms the study will consider the following:

1. Determine the behavioral pattern of secondary school students.
2. with ADHD in Ikwerre LGA of R/S.
3. To identify the factors accountable for ADHD amid secondary school students in Ikwerre LGA of R/S.
4. Identify the curbing approaches employed by students living with ADHD in the LGA under study.

**1.4 Research Questions**

1. What are the behavioral patterns of secondary school students with ADHD in the LGA under study?
2. What are the factors accountable for ADHD amid secondary school students in Ikwerre LGA of R/S?
3. What are the approaches employed to curb ADHD amid SSS in Ikwerre LGA of R/S?

**1.5 Research Hypotheses**

The following hypotheses stated in the null form are formulated to guide the study.

1. There is no significant difference in the behavioural patterns of students on rural and urban school with ADHD in Ikwerre LGA.
2. There is no significant difference in the factors accountable for ADHD in urban and rural school students in male as well as female in Ikwerre LGA.

### 1.6 Study Area

This study was conducted in Ikwerre LGA of R/S in Nigeria and African continent. The local government is one of the 23 LGAs in R/S with Port Harcourt Local Government as the headquarters of the state. It is situated in the southern part of Nigeria. It is bounded by four local governments namely: Eleme on the East, Asari-Toru on the West and Okirika on the South. The inhabitants speak mainly Ikwerre and English language. There exist inflow and outflow movements of people. The latter remains the mainland LGA in the state made up of 13 secondary schools both in the rural and urban areas. Census of 2016 showed that people constituted the entire populations of 265,400 from Wikipedia.

## Review of Related Literature

### The Concept of Attention Deficit Hyperactivity Disorder (ADHD)

The ADHD is a state of the brain that makes it problematic for youngsters or ADHD carriers to regulate their conduct in school as well as in social settings. According to American Academy of paediatrics (2001), ADHD remains the utmost typical chronic conditions of childhood which in addition impacts four to twelve percent of every school age youngsters. Nearly 3% of boys are affected compared to girls amid scholars diagnosed with ADHD. Two diverse terms are espoused to denote ADHD, firstly, Attention Deficit Disorder (ADD) is espoused by the U.S Department of Education as well as countless of the schools and secondly Attention Deficit Hyperactivity disorder (ADHD) is taken from the diagnostic standards in the diagnostic and statistical manual of mental disorders. Thus ADD/ ADHD disturbs youngsters in all areas, altering the youngster's home, lifetime education, behavior as well as social lifecycle. Jane, (2010) [12] opined that youngsters having ADHD exhibit difficulties obliging home-based schedules in addition to parents' anticipations. In school they have trouble finishing their class work, comprehending valuable facts. Their social interaction could be weakened by their impulsivity, hyper-activity as well as inattention, hindering their capability to select as well as retain friends. Research proposes that the frequent rate is equal for boys and girls but boys are more probably to be recognized (Austen, 2001). The problem exhibited by such children makes them require special attention. Thus, the U.S Department of Education (1991) declared that youngsters with these disorders are adequate for special education services and can be identified or placed under one of the categories of special education i.e. – learning disabilities, - behavioral as well as emotional disorders and – other health impairments.

### Types of Attention Deficit Hyperactivity Disorder

According to American psychiatric Association 1994, under the diagnostic and statistical manual of mental disorder

- Type A, primary inattentive (ADHD – 1A) children with this type have primary problems with attention.
- Type B, primary hyperactivity and impulsive (ADHD – H1) individuals with this type display hyperactivity and impulsivity behaviour but do not manifest problem with attention.
- Types C, a combination of ADHD – 1A and ADHD H1 (ADHDC) individuals with this type have both attention problems and display hyperactivity and impulsivity behaviours. They all have the common symptoms as explained above, except in some special cases.

### Behavioural Patterns of Children with ADHD

Weiner (2003) classified ADHDas a disruptive behaviour, deficit disorder conduct disorder and anti-social. According to American Academy of Child-Adolescent Psychiatry (AACAP, 2009); the following symptoms may be present in ADHD:

- The disorder must appear before the age 7.
- It must continue for at least six months.
- The symptoms must also create a real disability in at least two of the following area of the child's life (a) in the classroom (b) at home (c) on the playground (d) in the community (e) and/or social settings.

Lerner (2003) observed that most common symptoms of ADHD include, distractibility, poor concentration and focus, short term memory, spillage, procrastination, difficulties in organizing ideas and belongings. From the ongoing it has been observed that symptoms of ADD/ ADHD change at different stages of life, young children, elementary age children, adolescents and adults tend to exhibit different sets of behaviors. Older hyperactive children may be extremely restless and fidgety. They are likely to talk too much in class and may constantly fight with friends, siblings and classmates – Agomoh (2005). In adolescents, hyperactivity may no longer present itself but may diminish but other symptoms may appear such as behavior problems in form of low self-esteem, inattentiveness or even depression Zeigler (2013).

### ADHD and Sex

ADHD is identified roughly triplet intervals more habitually in boys compared to girls, even though the disorder is repeatedly ignored in girls owing to their indications from those of boys Singh (2008). Thus almost 20-50% of persons diagnosed in childhood continue to have signs into maturity in addition to amid 2-5% of grownups have the condition (NCCMH, 2008). ADHD is more seen in males than females. However, in adolescents and adults ADHD manifest in many forms, in children ADHD is increasingly being diagnosed in teenagers and adults (Faraone, Biederman & Mick, 1997; Wender, 1995). Many adult cases are former ADHD children who have grown up and continue to show signs of an attention disorder. However increasing numbers of ADHD diagnoses are being made in adults who were not diagnosed as children.

### Factors Accountable for Attention Deficit Hyperactivity Disorder (ADHD)

ADHD is the greatest frequently detected behavioral problem which affects 5-12% of entirely youngsters. Most lately, the center for diseases and control has described it as a common childhood neuro-development condition with reported occurrence percentage of 10% which denotes an upsurge over the previous years (CDC, 2017). The following group of factors has been speculated in literatures to also be accountable for ADHD such as

- Hereditary and neurological factors
- Maternal health, birth injury or oxygen deprivation at birth.
- Brain injury or head trauma
- Medications and medical illnesses.

- Socio-economic/environmental factors

**Strategies employed to curb ADHD**

ADHD, its diagnosis as well as treatment remains contentious since the 1970s. This controversies involved clinicians, teachers, policy makers, parents as well as the media. Their positions ranged from the view that ADHD is within the average range of behavior to the hypothesis that ADHD is a hereditary state (Mayes, Bagwell, Erkulwater, 2008). Other areas of controversy include the usage of stimulating prescriptions in children, the methodology of diagnosis as well as the probability of over diagnosis (Cormier, Eileen October, 2008). In 2009, the National Institute for Health and care excellence, while acknowledging the controversy, states that the amount treatments and methodologies of diagnosis are based on the dominant view of the academic literature (Schtarz & Alan, 2013). Grant Martin in his book "hyperactive child" 1997 remarked that ADHD is managed not cured. Treating ADHD will not make it go away but it can improve a child's chances for avoiding many of the long term problems associated with ADHD. Treatment of ADHD does not consist only in connecting a problem within the child; although the child is the focal point, self-management and self-control are crucial objectives for the child with ADHD, as such family members and teachers must also be willing to look at how their actions impact child's difficulties with impulsivity and inattention by modifying their behavior in line with the child and altering his environment positively to obtain a better fit. Because each ADHD child requires a different plan treatment that must be multidimensional and multifaceted and an evaluation should be comprehensive. The management of this disorder involves a combination of methods. This includes exceptional tutoring services, behavior adjustment, prescription control, family counselling as well as teachers training (Lerner, 1995) [15] many authorities also recommended the use of cubicles in the classroom to reduce extraneous or environment distractions. Cognitive training is also recommended for dealing with ADHD (Agomoh, 2012). However, Grinckslank *et al.,* (1961) suggested some approaches for managing children with ADHD these are: - structure and stimulus reduction, - behavior modification, - cognitive training and – medication. Greenwill (1998) also commented that tranquilizers, anti-depressants, even anti-histamines have been prescribed for ADHD while recently some cases are treated with stimulant drugs. However, the most commonly espoused drugs are methylphenidate (Ritatin) pemoline (cylert), dexthroamphetamine (dexederine and a mixture of several amphetamines (Swarts, 2000).

**Instructional Designers and ADHD**

Instructional design incorporates the interpretation of learning as well as performance difficulties plus the design, expansion, operationalization, appraisal in addition to managing of instructional as well as non-instructional processes and resources envisioned to enhance learning and performance in a diversity of sceneries predominantly educational establishments and work place. Thus, the use of media for instructional purpose as well as the usage of methodical instructional design measures remain key rudiments in the field of instructional design. The emphasis of the field is mainly to improve human performance in the work place through a variety of instructional and non-instructional means. In the process of instructional design the core elements of ADDIE (Analysis, Design Development, Implementation plus Evaluation) are indispensable. For effective design of instruction, the designers must go through the analysis which involves the target audience, or learners' age, home background, optic capabilities, health status etc. while all this are considered, the scholars living with ADHD must be given a place in designing an instruction for such scholars. The analysis must be exhausted before the design, development amid others. For the fact that instructional design is student centered, teaching plus other sorts of tutoring are basically a source to the termination of learner performance. Thus, scholars with ADHD should be considered in this direction by the designers, the instructional material that can be utilized in teaching and learning of ADHD scholars, to enable them understand the objective of the lesson. The study is linked to Sir Francis Galton's nature and nurture theory of (1822 – 1911). The science of nature and nurture was first developed by Francis Galton a cousin of Charles Darwin in 1895 and it suggest that heredity and environment exposures contribute more to behavioral traits like criminality and intelligence. Human behavioral development is thought to be affected by both people's natural deposition and the environment in which they are raised. Also a person's gene or personal life affects the behavior. Nature is inclined by hereditary heritage plus other natural conditions while nurture is the impact of external causes after conception. The theory in this modern time discuss the influence of heredity and environment on advancement of persons and their adjustment to the society. ADHD is a natural neurological disorder in which its manifest is influenced by age, sex, psychosomatic makeup, as well as social and cultural factors. Similarly, Grant (1997) [11] summarized the causes of ADHD to be hereditary, neurological factor, genetic brain injury, birth injury, drugs and alcohol in the parental environment to correspond with Francis Galton nature theory. A related study was taken by Grant 1997 on the essential classroom needs of an ADHD child. In which specification were made on how to equip the classroom. Scholars have been carried out in other means but it appears no study on ADHD has been carried out in this local government and that is the gap to be filled.

**Research Method**

The research design for this study was the descriptive survey design. The population of the study was made up of 13 SSSs in Ikwerre LGA of R/S with a population of 13,500 students as a reflection of the number of parents and about 450 teachers. Out of the 13 public secondary schools listed by the zonal board; Taro Yamane's formula for sample size was substituted with the 13,950 population to get approximately 400 sample size. Parents of two hundred (200) students of adolescent ages (male and female) and two hundred (200) teachers were therefore sampled using SRST for teachers and probability sampling method for parents due to some of them are illiterate. Out of 400 respondents, 214 made up of male and 170 female this make up 384 respondents while the other 16 had the their questionnaire mutilated. The instrument for data gathering remained a reformed questionnaire adapted from SNAP IV ADHD rating scale and DBDRS (Disruptive Behavioural Disorder

Rating Scale) developed by Swansen, Nolan and Pelhum (2017) abbreviated as CBFRADHDQ amid Secondary School Students in Ikwerre L.G.A. The section A of the questionnaire encompassed of data on personal records of the respondents whereas section B elicits facts on the behavioral patterns and factors accountable for students living with ADHD in Ikwerre L.G.A of R/S. All test questions make use of 4-point Likert scale type of response approach stretching from Strongly Agree (SA =4), Agree (A = 3), Disagree (D=2) and Strongly Disagree (SD = 1). Respondents were expected to carefully read the statement by placing a tick on one of the four response alternatives. The face plus content validity of the instrument remained confirmed by authorities in measurement as well as evaluation.

The reliability of the FADHDQ stood determined by the use of test-retest procedure, pilot tested using 20 teachers and 20 parents randomly sampled from outside the area of the study. An interval of one week was allowed between the two test administered. The scores of the subjects on the two tests were obtained and subjected to PPMCC and a score of 0.70 stood acquired which was rated high sufficient to validate the usage of the instrument for the study. Mean plus standard deviation were espoused to appraise the research questions. T-test stood espoused to test the hypotheses at 0.05 level of significance. Rank order was employed in discussion of findings to give hierarchy of items.

## Results

**Research Question One:** What are the behavioural patterns of secondary school students with ADHD in the LGA under study?

**Table 1**

| S/N | The following are behavioral pattern of secondary school students with ADHD | SA | A | D | SD | CR | N | Mean $\bar{X}$ | SD $\bar{X}$ | Rank Order | Decision |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | They have difficulty sitting still, playing quietly or relaxing | 100 | 204 | 60 | 20 | 1044 | 384 | 2.72 | 0.82 | 15th | A |
| 2 | They recurrently lose or misplace homework, books, or other items | 167 | 182 | 20 | 15 | 1269 | 384 | 3.30 | 0.91 | 5th | SD |
| 3 | They move around continually, often run or climb unsuitably | 163 | 109 | 90 | 22 | 1181 | 384 | 3.08 | 0.88 | 12th | SD |
| 4 | They talk disproportionately as well as seem not to listen when spoken to directly | 173 | 140 | 65 | 6 | 1248 | 384 | 3.25 | 0.90 | 7th | SD |
| 5 | They have trouble staying organized, planning into the future plus finishing projects | 130 | 201 | 40 | 13 | 1216 | 384 | 3.17 | 0.89 | 9th | SD |
| 6 | They have a quick temper or short fuse | 189 | 177 | 11 | 7 | 1316 | 384 | 3.43 | 0.93 | 3rd | SD |
| 7 | They constantly fidget and squirm | 154 | 103 | 81 | 46 | 1133 | 384 | 2.95 | 0.86 | 4th | A |
| 8 | They are often emotional when responding to stress | 131 | 164 | 54 | 35 | 1159 | 384 | 3.02 | 0.87 | 13th | SD |
| 9 | They are inattentive, the noiseless idealist who sometime sit at desk and stare into space | 241 | 104 | 25 | 14 | 1340 | 384 | 3.49 | 0.83 | 1st | SD |
| 10 | They are inattentive, hyperactive and impulsive | 123 | 196 | 52 | 13 | 1197 | 384 | 3.12 | 0.88 | 10th | SD |
| 11 | They often blurt out answers before questions have been accomplished | 173 | 144 | 40 | 27 | 1231 | 384 | 3.21 | 0.89 | 8th | SD |
| 12 | They act impulsively without thinking and intrude on other peoples conversations or games | 221 | 84 | 40 | 39 | 1255 | 384 | 3.27 | 0.91 | 6th | SD |
| 13 | They have issues being dedicated, simply confused or get tired with a task prior to its conclusion | 197 | 152 | 20 | 15 | 1299 | 384 | 3.38 | 0.92 | 4th | SD |
| 14 | They often interrupt other, say the wrong thing at the wrong time | 159 | 142 | 52 | 31 | 1197 | 384 | 3.12 | 0.88 | 10th | SD |
| 15 | They don't have the ability to keep powerful emotions in check resulting in angry outburst or temper tantrums | 184 | 185 | 12 | 3 | 1318 | 384 | 3.43 | 0.93 | 2nd | SD |

Aggregate Mean = 47.94; Grand Mean = 3.20; SD = Strongly Agree; A = Agree

Table 1 shows that out of the 15 items espoused to test the behavioral pattern of the students, 13 of the items had mean score of 3.00 and above each which was strongly accepted to be above criterion mean of 2.50 while only two items had criterion mean of 2.72 and 2.94 separately for "they have difficulty sitting still, playing quietly or relaxing and they constantly fidget and squirm" respective and are therefore also accepted as the behavioral pattern of secondary school students living with ADHD in Ikwerre LGA of R/S. Therefore, the grand mean score of 3.20 showed that the behavioral pattern of secondary school students with ADHD in Ikwerre L.G.A include: hyperactivity, talking excessively, impulsivity, trouble staying organized or planning ahead, having quick temper, inattentive as well as incapability to put influential emotions in check resulting in temper tantrum.

**Research Question Two:** What are the factors accountable for ADHD amid secondary school students in Ikwerre LGA of R/S?

**Table 2**

| S/N | The following describes the factors accountable for ADHD amid secondary school students in Ikwerre L.G.A | SA | A | D | SD | CR | N | Mean $\bar{X}$ | SD $\bar{X}$ | Rank Order | Decision |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Illnesses and medications are often noticed in them | 85 | 106 | 104 | 89 | 955 | 384 | 2.48 | 0.79 | 13th | D |
| 2 | They are easily influenced by peer group | 213 | 102 | 50 | 19 | 1296 | 384 | 3.38 | 0.92 | 3rd | SA |
| 3 | They react to parental frustrations and negative reactions | 160 | 149 | 35 | 40 | 1177 | 384 | 3.07 | 0.88 | 7th | SA |
| 4 | They are influenced by environmental factors like drugs and alcohol | 138 | 197 | 28 | 21 | 1199 | 384 | 3.12 | 0.99 | 5th | SA |
| 5 | Lack of conducive learning environment frustrates them | 238 | 84 | 50 | 12 | 1316 | 384 | 3.43 | 0.93 | 1st | SA |
| 6 | Hereditary and genetic bases are contributory factors to ADHD | 122 | 168 | 60 | 34 | 1146 | 384 | 2.98 | 0.86 | 9th | A |
| 7 | Diseases like epilepsy and seizures affects them | 68 | 102 | 160 | 54 | 952 | 384 | 2.47 | 0.79 | 14th | D |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 8 | Brain injury or head trauma are major role players in the disorder | 190 | 110 | 40 | 44 | 914 | 384 | 2.38 | 0.77 | 15th | D |
| 9 | Premature birth or forceps delivery contributes to the disorder | 108 | 175 | 66 | 35 | 974 | 384 | 2.53 | 0.79 | 12th | A |
| 10 | High intake of sugar and glucose influences them | 114 | 132 | 88 | 50 | 1074 | 384 | 2.80 | 0.70 | 10th | A |
| 11 | Fatal exposure to toxic substances may also be accountable for ADHD | 104 | 201 | 62 | 17 | 1160 | 384 | 3.02 | 0.87 | 8th | SA |
| 12 | Excessive alcohol intake leads to ADHD | 128 | 204 | 28 | 24 | 1204 | 384 | 3.13 | 0.88 | 4th | SA |
| 13 | Oxygen deprivation at birth, maternal health may be the accountable for ADHD | 135 | 177 | 40 | 32 | 1183 | 384 | 3.08 | 0.87 | 6th | SA |
| 14 | Neurological factors are common causes associated with ADHD | 206 | 137 | 36 | 5 | 1312 | 384 | 3.42 | 0.93 | 2nd | SA |
| 15 | Poor parenting, problems in family life is accountable for ADHD | 122 | 104 | 100 | 58 | 1058 | 384 | 2.75 | 0.83 | 11th | A |

Aggregate Mean = 47.94; Grand Mean = 2.94; SA = Strongly Agreed; A = Agreed; SD = Strongly Disagreed, D = Disagreed

Table 2 is on the factors accountable for ADHD, it also shows that out of 15 items espoused to test the factors accountable for ADHD amid secondary school students in Ikwerre L.G.A; eight of the items 2, 3, 4, 5, 11, 12, 13, & 14 had mean scores of 3.00 and above each which was strongly accepted to be above criterion mean of 2.50 while four of the items 6, 9, 10 & 15 had mean scores of 2.00 and above the criterion mean and are also accepted as the factors accountable for ADHD amid secondary school students in Ikwerre LGA of R/S. However, three of the items number 1, 7 & 3 could not pass the criterion test of 2.50 and was therefore rejected as factors accountable for ADHD amid secondary school students in Ikwerre L.G.A. These rejected test items were illnesses and medications are often noticed in them, diseases like epilepsy and seizures affects them, brain injury or head trauma are major role players in the disorder respectively. Therefore the grand mean score of 2.94 showed that the factors accountable for ADHD amid secondary school students in Ikwerre L.G.A include: environmental factors, hereditary and genetic bases, parental frustrations, premature birth of forceps delivery, fatal exposure to toxic substances, neurological factors and poor parenting style, maternal health and high intake of sugar.

**Research Question Three:** What are the approaches employed to curb ADHD amid SSS students in Ikwerre LGA of R/S?

**Table 3**

| S/N | The following are approaches employed to curb attention deficit hyperactivity disorder amid secondary school students | SA | A | D | SD | CR | N | Mean $\bar{X}$ | SD $\bar{X}$ | Rank Order | Decision |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | The introduction of a special needs educator in the school to monitor students with ADHD | 12 | 101 | 83 | 188 | 705 | 384 | 1.84 | 6.78 | 10th | Strongly Disagree |
| 2 | Use of disciplinary measures in the school | 125 | 188 | 58 | 13 | 1193 | 384 | 3.11 | 0.88 | 2nd | Strongly Disagree |
| 3 | Introduction of behaviour modification therapists in the school | 101 | 128 | 86 | 69 | 1029 | 384 | 2.68 | 0.82 | 7th | Agreed |
| 4 | Structure and stimulus reduction in the classes | 94 | 156 | 100 | 34 | 1079 | 384 | 2.81 | 0.83 | 5th | Agreed |
| 5 | Cognitive training of the students by the teachers | 107 | 128 | 80 | 69 | 1041 | 384 | 2.71 | 0.82 | 6th | Agreed |
| 6 | Family counselling and teachers training | 87 | 202 | 65 | 30 | 1114 | 384 | 3.20 | 0.89 | 4th | Strongly Disagree |
| 7 | Medications like antidepressants, tranquilizers and anti-histamines have been prescribed in use for students with this ADHD | 43 | 191 | 104 | 46 | 999 | 384 | 2.60 | 0.81 | 8th | Agreed |
| 8 | Removal of food addictive/control of blood sugar level | 102 | 198 | 57 | 27 | 1143 | 384 | 2.98 | 0.87 | 3rd | Agreed |
| 9 | Psychotherapy (counselling) of students | 133 | 176 | 70 | 25 | 1225 | 384 | 3.19 | 0.89 | 1st | Strongly Disagree |
| 10 | Social skills training in school have been espoused to manage students with ADHD | 88 | 109 | 107 | 80 | 973 | 384 | 2.53 | 0.79 | 9th | Agreed |

Aggregate Mean = 27.65 Grand Mean = 2.78

Table 3 focused on the approaches employed to curb attention deficit hyperactivity disorder. It also shows that out of the 15 items espoused to test the approaches employed to curb ADHD amid SSS students in Ikwerre L.G.A, three 2, 6 & 9 of the items had mean score of above 3.00 which was strongly accepted to be above criterion mean of 2.50 while only six items 3, 4, 5, 7, 8 & 10 had criterion mean a little above from the table mean and are therefore also accepted as the approaches employed to curb ADHD amid secondary school students in Ikwerre LGA of R/S. But one test item strongly disagreed with the decision rule by mean and standard deviation (SD) of 1.84 and 6.78 against the accepted criterion mean of 2.50. This rejected item was the introduction of special needs educator in the school as strategy to curb ADHD amid secondary school students. therefore the grand mean score of 2.78 showed that the approaches employed to curb ADHD amid secondary school students in Ikwerre L.G.A include: use of disciplinary measures in the school, introduction of behaviour modification therapist in the school, structure and stimulus reduction in class, cognitive training, family counselling and teachers training, medications, removal of food additives/control of blood sugar, psychotherapy.

**Hypotheses One:** There is no significant difference in the behavioural patterns of students in rural and urban schools in Ikwerre LGA.

**Table 4:** t-test analysis of behavioural patterns of rural and urban students with attention deficit hyperactivity disorder (ADHD)

| | School Location | N | Mean | SD | Df | t-cal | t-crit | Decision |
|---|---|---|---|---|---|---|---|---|
| Behavioural patterns of ADHD for | Urban | 192 | 3.24 | 0.96 | 382 | 2.48 | 196 | Significant |
| | Rural | 192 | 3.48 | 0.93 | | | | |

N = Number, SD = Standard Deviation, df = degree of freedom, t-cal = t-test calculated value, t-crit = t-test critical value.

Table 4 shows the difference between the mean score rating behavioral patterns of ADHD based on school location amid students in urban schools as well as students in rural schools of Ikwerre L.G.A of R/S. The table shows that the mean difference in the responses of students based on school location gave t-cal value of 2.48 and df of 382. As the t-cal is larger than t-crit; it implies significant difference exist in the behavioral patterns of ADHD based on school location. Hypothesis 1 ($HO_1$) is therefore rejected.

**Hypothesis Two:** There is no significant difference in the factors accountable for ADHD based on sex (male and female) in Ikwerre LGA.

**Table 5:** t-test analysis of significant difference between male and female of factors accountable for attention deficit hyperactivity disorder (ADHD)

| | Sex | N | Mean | SD | df | t-cal | t-crit | Decision |
|---|---|---|---|---|---|---|---|---|
| Factors accountable for ADHD between | Male | 184 | 3.04 | 0.96 | 382 | 0.142 | 196 | Not Significant |
| | Female | 200 | 3.09 | 1.21 | | | | |

N = Number, SD = Standard Deviation, df = degree of freedom, t-cal = t-test calculated value, t-crit = t-test critical value.

Table 5 shows the difference between the mean score rating of factors accountable for ADHD based on sex, between male students and female students in Ikwerre L.G.A of R/S. The table shows that the mean difference in the responses of the students based on sex gave a t-cal value of 0.142 and df of 382. Since the t-cal is lesser than t-crit; it infers existence of no significant difference in the factors accountable for ADHD based on sex. Hypothesis 2 ($HO_2$) is therefore accepted and retained.

## Discussion of Findings

**Abnormal behavioral pattern of secondary school students:** The research question one determined the behavioral pattern of secondary school students with ADHD in Ikwerre L.G.A. The result revealed that some responses of the respondents were very high in general acceptance of abnormal behavioral pattern using rank order from 1st to 15th test items, inattentive, incompetence to retain influential emotions in check resulting in heated outburst or anger irritabilities, quick temper fuse, difficulty staying still, playing quietly or relaxing, talking excessively, impulsivity, hyperactivity. The outcome might not be independent of the fact that some of the respondents are already living with this disorder in a mild or moderate form especially those who have very often been associated with Disruptive Behavioral Disorder (DBD) or those who often faced disciplinary problems in school. This result is in agreement with that of Lerner (2003) who agreed that older hyperactive children could be tremendously fidgety as well as twitchy, they are like to talk too much in class plus could continuously battle with friends, siblings as well as classmates. However, by adolescents, hyperactivity may no longer present itself. Although the hyperactivity could reduce, other signs could appear such as behavior problems, low self-esteem, inattentiveness or even depression. it also agrees with Ambuabunos (2011) [4] and Zeigler (2013) who opined that ADHD may make children to be restless with low frustration tolerance by blowing up and saying things they don't mean and cannot be easily motivated by consequences or punishment, as such they may be more difficult to discipline and may repeat misbehaviour

**Factors accountable for ADHD:** Research question two considered the factors accountable for ADHD amid secondary school students in Ikwerre L.G.A, the result shown using rank order from 1st to 15th test items proved a high extent that lack of conducive learning environment, neurological factors, peer group pressure, hereditary and genetics basis, parental frustrations, premature birth, high intake of sugar and poor parenting problems may have been the underlying factors accountable for ADHD, diseases like epilepsy being the cause, brain injury or head trauma ranked lowest as the factors accountable. This result may not be independent of the fact that some excessive alcohol or drugs espoused by a mother while the child is in the uterus can cause a number of problems and ADHD is one of them just like other sources suggests that it runs in the family as cited in Agomoh (2005). Swartz (2000) studies on ADHD also show that occurrence of ADHD upsurges with hypoxia as well as prematurity. In that same line, Agomoh and Kanu (2015) cited that brain dysfunction or malfunctioning of the front lobes of the brain may be a contributory factor to ADHD. In agreement, Cortese & Castellanos (2012) stated that neuroimaging methodologies advocate alterations amid individuals with as well as without ADHD in the brain, i.e. thinner regions of the cortex.

**Strategies employed to curb ADHD in SSSs in Ikwerre L.G.A:** The approaches employed to curb ADHD in secondary schools in Ikwerre L.G.A was investigated. The result showed that there have been no introduction of special needs education teachers to the public secondary schools, as such the management of the disorder has been through guess work by the regular school teachers. In rank order from the 1st to the 10th hierarchy; the findings agreed with psychotherapy counselling of students the use of disciplinary measures, removal of food additives, family counselling and teachers training, cognitive and stimulus reduction, cognitive training of teachers and students, behaviour modification therapy, medications and social skill training. This finding was in order with the research made by Lerner (1995) where it was stated that the management of this disorder involves a combination of method. This includes special education services, conduct adjustment, prescription controlling, family counselling and teachers' training. Agomoh (2012) again agreed with this finding that many authorities also recommended the use of cubicles in the classroom to reduce extraneous or environmental distractions, cognitive training was also recommended for dealing with ADHD.

In hypothesis one the study focused on the significant difference in behavioural patterns of students with ADHD based on school location. The responses showed there is a significant difference in the behavioural patterns of students with ADHD based on rural and urban locations which supports the result that nurturing modern homes and environment with clear and consistent structure is crucial to the treatment of ADHD children. For school location, the studies revealed that student from rural settlements are to a large extent more vulnerable to having ADHD than students from urban settlements. This may not be unconnected to the fact that most students in urban locations are more exposed to the existence of this disorder, may have been diagnosed earlier in life and therefore been able to manage the condition much better than those in rural locations. Lerner (2012) in agreement state that regarding socioeconomic inequities, public health insurance coverage seem to be associated with a higher prevalence of developmental disabilities; low family income and low maternal education have similar but less significant impacts.

In hypothesis two, the study focused on the significant difference in factors accountable for ADHD based on sex. The responses showed there is no significant difference in the factors accountable for ADHD based on sex which supports the result by Ambuabunos (2011) [4] who recorded prevalence decline of females to males 5.8% at 6 years and rise to peak of 12.6% amid those 10 years of age of ADHD. For sex, there was strong agreement in the findings which reveal the fact that ADHD is more common in male students than in female students which might not be unconnected to the fact that the symptoms are often overlooked in girls than in boys due to their differing symptoms which was in line with Lerner (2012) who agreed in her studies that ADHD is more common in males than in females, the females with ADHD are more likely to have problem primarily with inattention. The studies also tallied with Ambuabunos (2011) [4] who recorded prevalence decline of females to males 5.8% at 6 years and rise to peak of 12.6% amid those 10 years of age.

## Conclusion

The study is on the behavioral patterns and factors accountable for ADHD amid SSS students in Ikwerre L.G.A from the findings it can be concluded that the entire SSSs in Ikwerre L.G.A have cases of students with ADHD which reflect remarkably in their disruptive behavioral disorder (DBD) attitude. Some of the factors accountable for this disorder amongst these students are traced to nature and nurture for genetics and environmental influence respectively. Age, gender, socio-economic statues and school location are major influences to this disorder. The SSSs do not have special needs education department nor counselling labs, neither do they engage the services of special needs professionals instead they engage the services of older regular teachers in the school in forming disciplinary committees who will handle cases of disruptive behaviors like ADHD using punitive measures which actually escalate the cases and offer more harm than good. ADHD is as predominant in Nigeria as in other parts of the world with more males involved but the symptoms and characteristics changes with age and sex. Although there is no proven way to prevent ADHD; early identification, involvement of special needs educator, psychotherapy, counselling of parents and training of teachers can prevent many of the crises associated with the disorder. As a result teaching methods and instructional materials for students with ADHD espoused by professional teachers must include managing impulsivity, reducing hyperactivity and stimulus reduction strategy to increase attention. At this point, instructional designers are implicated in the study to consider the behavioural patterns and factors accountable for ADHD in course of designing instruction for such students as to enable them achieve the precise objective of the lesson.

## Recommendations

Based on the findings of the research work, the following recommendations were made:

1. Instructional designers should be engaged in instructional resource centre in rural and urban schools to identify appropriate learning approaches and design for differentiated instruction for ADHD to benefit maximally from teaching-learning process.
2. School health programs should be conducted from time to time to offer absolute possibility for the identification of such teenagers.
3. Amplified attention ought to be paid to the identification plus management of such youngsters seen in public schools with the hope of redirecting their social as well as academic lives.
4. Efforts ought to be made at building public awareness for ADHD amid teachers as well as parents.
5. The R/S Government and the SSSs Board (SSSB) Ikwerre L.G.A should work in synergy in training and retraining of staff on ways of handling the disorder in an inclusive school setting.

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