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INFLUENCE OF GENDER AND BIRTH ORDER ON PUPILS' WITH AUTISM SPECTRUM DISORDER IN PUBLIC PRIMARY SCHOOLS IN OGOJA LOCAL GOVERNMENT AREA OF CROSS RIVER STATE, NIGERIA

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ABSTRACT

This study adopted survey design to examine the influence of gender and birth order on pupils' with autism spectrum disorder. It was guided by two research questions and two null hypotheses. A sample of sixty (60) primary 4 pupils' with autism spectrum disorder was selected from public primary schools using census approach. One instrument titled "Autism Spectrum Disorder Questionnaire (ASDQ) was used for data collection. The reliability of the questionnaire established using Cronbach Alpha reliability method which range from .84 to .86. The hypotheses were tested using Independent t-test for hypothesis one and One Way Analysis of Variance (ANOVA) for hypothesis two. Both were tested at .05 level of significance. The findings of the study revealed that gender, birth order significantly influence pupils' with autism spectrum disorder. It therefore concluded that autism spectrum disorder of primary schools pupils depend on their gender differences as well as different in birth orders. Based on the findings and conclusion of this study, it was recommended amongst others that intervention strategies such as teaching the pupils with autism spectrum disorder skills for interacting with others, understanding social cues, and building relationships should be tailored accordingly since the influence of gender and birth order on ASD vary based on individual characteristics.

KEYWORDS: Autism spectrum disorder, birth order, gender, primary schools

INTRODUCTION

Pupils' with autism spectrum disorder (ASD) often have problems with social communication and interaction and repetitive behaviors or interests. These characteristics can make life very challenging to them. Most of them have trouble understanding what other people think and feel which makes it hard for them to express themselves, either with words or through gestures, facial expressions, touch and even demonstrate very limited understanding of the concepts taught in schools (Ogar, Ibok Odey, Joseph, Unimuke, & Ungie, 2023).

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According to Durkin, Maenner, Baio, Christensen, Daniels, Fitzgerald, and Wingate, (2017), individual with Autism spectrum disorder (ASD**)** always have difficulties in their interaction with family members, friends, non-verbal behaviors, peer relationships and social reciprocity.

The standardised prevalence of autism spectrum disorder (ASD) in Nigeria is estimated to be between 1.0% to 2.3% of the population while the prevalence of ASD in Cross River State, Nigeria, is estimated to be around 1.8%. Although the prevalence of ASD can vary across different regions and populations due to factors such as demographic factors, awareness, access to diagnostic services, and methodological approaches used in the studies (Lerner, Mazefsky, White, & McPartland, 2018). Whilst obtaining a diagnosis of ASD can be a lengthy, difficult process, less is known about experiences of subsequent support after receiving a diagnosis (Ataben, Sunday & Adie, 2021). Early support following a diagnosis of ASD is considered essential for improving quality of life and reducing parental stress, potentially mitigating some of the psychosocial and financial difficulties faced by autistic individuals and their families. Yet, support tends to be limited, difficult to access, insufficient and unsatisfactory (Muskens, Velders, & Staal,2017; Eburu, et al, 2023).).

Apart from the standardised prevalence of autism spectrum disorder (ASD), gender is one of the demography variables that could be considered when identifying pupils' with autism spectrum disorder. Gender as the socially/culturally constructed characteristics and roles which are associated to males and females in any society (Ibok, &Ntibi,2021; Undielikwo, Ibok, & Ubi, 2023). Gender difference always exist among pupils' autism spectrum disorder (Durkin, Maenner, Baio, Christensen, Daniels, Fitzgerald, & Wingate, 2017). Gender refers to the characteristics of women, men, girls and boys that are socially constructed which includes norms, behaviours and roles associated with being a woman, man, girl or boy, as well as relationships with each other. As a social construct, gender varies from society to society and can change over time (Ibok, Thomas, & Nyong, 2019). Males are more frequently diagnosed with autism than females. The prevalence ratio of gender of pupils' autism spectrum disorder is often cited as about 4 males for every 1 female diagnosed. Other research indicates that it closer to 3:1 or 2:1. (Ibok, Meremikwu, & Umoh, 2020). Ratto, Kenworthy, Yerys, Bascom, Wieckowski, White and Anthony (2018) conducted a study on ti examined sex differences in autistic traits and adaptive skills and found that girls with ASD exhibited fewer social and communication difficulties compared to boys. Lai, Kassee, Besney, Bonato, Hull, Mandy and Ameis (2019) conducted a systematic review and meta-analysis found that females with ASD are more likely to have co-occurring mental health conditions compared to males with ASD. Lehnhardt, Falter, Gawronski, Pfeiffer, Tepest, Franklin, and Vogeley (2016) conducted a study on Sex-related cognitive profile in autism spectrum disorders diagnosed late in life and found that females with late-diagnosed ASD exhibited different cognitive profiles compared to males, with stronger verbal skills and weaker visuospatial abilities. Wood-Downie, Wong, Kovshoff, Mandy, Hull, and Hadwin, (2021) investigated sex/gender differences in camouflaging (the masking of autistic traits) in children and adolescents with ASD and found that girls engaged in more camouflaging behaviors than boys.

Bargiela, Steward, and Mandy (2016) conducted a qualitative study explored the experiences of late-diagnosed women with ASD and highlighting a significant unique challenges and differences in the female autism phenotype Loomes, Hull, and Mandy (2017) conducted a study on what is the male-to-female ratio in autism spectrum disorder? A systematic review and meta-analysis and found that the male-to-female ratio in autism spectrum disorder (ASD) is approximately 3:1. Autism Spectrum Disorder (ASD) has historically been studied, known, and diagnosed in males. Females tend to remain unidentified, especially those with average intelligence abilities. This sex/gender difference might be partially explained by biological risk factors, but it is probably also bound to methodological issues (Ogar, Ibok, Odey, Joseph, Unimuke, & Ungie,2023). Autistic boys and girls may show signs and symptoms of autism in different ways. This can lead to delays in diagnosis in girls, and boys being diagnosed with autism more than girls (Bölte, Girdler, & Marschik, 2019).

Birth order is one of the another identified factors that could influence pupils' with autism spectrum disorder. Birth order is the order in which a child is born. The first child is normally the

oldest child that is born into a family. The middle child is can be the second or third child all the way to the last born or the baby of the family. The birth order can change if there is a large difference in ages from one child to the next. A child who is the second bon can change if the child has an older sibling that he/she was not raised with, the birth order then changes for the child to be a second first born child of the parent (Ibok, Meremikwu. Orim, Anditung & Inah, 2023). There are different results and interpretations in the literature with respect to the relation between birth order and ASD. The empirical evidence on the influence birth order on autism spectrum disorder (ASD) is mixed, with some studies indicating a higher risk or severity of ASD in firstborn children, middle children or last children while others found no significant influence. Hoffmann, Windham, Anderson, Croen, Grether, and Risch, (2014) conducted a study on evidence of reproductive stoppage in families with autism spectrum disorder and found that families with a child with autism were less likely to have additional children, suggesting a potential role of birth order in autism risk. Durkin., Maenner, Newschaffer, Lee, Cunniff, Daniels, and Schieve, (2016) examine the relationship between birth order and autism spectrum disorder (ASD), and found mixed results across 15 studies reviewed. Vuijk, Deen, Louwerse, and van der Ende, (2018) conducted a meta-analysis of 18 studies to established the relationship between birth order and autistic traits and found a small but significant increased risk of ASD in firstborn children compared to later-born children. Sandin, Otero, Magnusson, Surén, Schendel, Frigren, and Hellner Gumpert, (2020) conducted a large cohort study of over 2 million children in Sweden and found that firstborn children had a slightly higher risk of ASD compared to later-born children.

Böhm, and Seidler-Brandler, (2021) conducted a study on birth Order and Neurodevelopmental Disorders, including ASD and found no significant influence of birth order on autism spectrum disorder. Zhang, Wu,Yang, Zhang, Ding, Zhou, and Zou, (2023) conducted a study on the influence of birth order on the severity of autism spectrum disorder symptoms and found a significant influence of birth order on severity of autism spectrum disorder symptoms. This recent study found that firstborn children may exhibit more severe ASD symptoms compared to later-born children. Birth order is often believed to have a profound and lasting effect on psychological development and learning of pupils with autism spectrum disorder

Purpose of the study

The purpose of this study is to investigate the influence of gender and birth order on pupils with autism spectrum disorder among primary schools in Ogoja Local Government Area of Cross River State, Nigeria. Specifically, the study seeks to;

i) The influence of gender on pupils with autism spectrum disorder

ii) The influence of birth order on pupils with autism spectrum disorder

Research questions

The following questions guided this study:

i). How does gender influence pupils with autism spectrum disorder?

ii). How does birth order influence pupils with autism spectrum disorder?

Statement of hypotheses

The following hypotheses were formulated for this study:

i) The is no significant influence gender on pupils with autism spectrum disorder

ii)The is no influence of birth order pupils with autism spectrum disorder

METHODOLOGY

The study area was Ogoja Local Government Area which is in the Northern Senatorial District of Cross River State, Nigeria. The research design used for this study was the survey design. The researchers used this design in attempt to make inference about the population under study and also allows the assessment of factors under studies at a single point in time. The population of the study is made up of all the primary four to six pupils with autism spectrum disorder among primary schools in Ogoja Local Government Area of Cross River State, Nigeria. Students that made up the population of this study hail from different ethnic groups and socio-economic background. Census sampling approach was adopted since the population was not too big for the researchers to handle. A sample of 60 pupils with autism spectrum disorder in primary schools in Ogoja Local Government Area of Cross River State, Nigeria which consisted of 26 males and 34 females.

The instrument used for data collection was the questionnaire titled "Autism Spectrum Disorder Questionnaire (ASDQ). The questionnaire contained two sections.

Section A was designed to elicit information from respondents' demographic variables such as the name of the school, gender and birth order while section B is an 10 item four points Likert type scale designed to measure the extent of autism spectrum disorder. Each item required the respondent to indicate the frequency of his or her various opinions under strongly agree, agree, disagree and strongly disagree. The two kinds of validation established for the instrument of the study were face and content validity. The face and content validity were established by using two (2) experts in special education and two (2) expert in Test, Measurement and Evaluation; in the faculty of Education, University of Calabar. The expert certified that the instrument was face and content valid and could be used for the study. Reliability was established through Cronbach alpha reliability of the instrument, a trial testing was done using ten (10) pupils with autism spectrum disorder in Ogoja Local Government Area of Cross River State, Nigeria using Cronbach alpha reliability was conducted and the internal consistency range from 84 to .86 showed that the research instrument was reliable. The hypotheses formulated to guide the study were appropriately tested using independent-test. and One Way Analysis of Variance.

PRESENTATION OF RESULTS

The result of the analysis is presented in Tables 1, 2, and 3. The hypotheses were tested at .05 significant level.

Ho1: The is no significant influence of gender on pupils with autism spectrum disorder.

The independent variable in this hypothesis is gender while the dependent variable is pupils' with autism spectrum disorder. To test this hypothesis, gender were classified into two groups (Male and Female). Based on their classification, their means were computed and compared using the independent t-test analysis. The result is presented in Table 1

TABLE 1: Independent t-test analysis on influence of gender on pupils with autism spectrum disorder.

Variable	N	X	SD	t	p-level
Gender					
Male	26	30.96	4. 38		
					6.315.000
Female	34	23.58	4.62		

*Significant at 0.05, t -critical = 1.676, df = 58

The result of the analysis as presented in Table 1 revealed that, there is a significant influence of gender on pupils with autism spectrum disorder(t=6.315: p=.000) . With this result, the null hypothesis was rejected while the alternative was retained at the 0.05 level of significance. with 58 degree of freedom. The result also shows that male pupils exhibits more autism spectrum disorder with mean score of 30.96 than their female counterpart with mean score of 23.58

Ho 2: There is no significant influence of birth order on pupils with autism spectrum disorder.

The independent variable in this hypothesis is birth order while the dependent variable is pupils' with autism spectrum disorder. To test this hypothesis, birth order were classified into three groups (first, middle and last). Based on their classification, their means were computed and compared using the One Way Analysis of Variance (ANOVA). The result is presented in Table 2

Table 2: One-Way Analysis of Variance on influence birth order on pupils with autism spectrum disorder

Birth order	N	X	SD		
First	16	32.16	3.88		
Middle	22	26.39	4.12		
Last	24	30.48	3.96		
Total	60	26.78	3.94		
Sources of variable		SS	df	MS	F-value P-value
Between group		1228.623	2	614.315	8.217* .000
Within group		4261.625	57	744.705	
Total		5490.248	59		

* Significant at 0.05 level (Critical $F_{2, 57} = 3.18$)

The result of the analysis as presented in Table 1 revealed that, there is a significant influence of birth order on pupils with autism spectrum disorder (F=8.217: p=.000). With this result, the null hypothesis was rejected while the alternative was retained at the 0.05 level of significance
with 2 and 57 degree of freedom. With this result, the null hypothesis was rejected and alternative hypothesis was accepted**.** The result also shows that pupils' who are first born with mean score of 32.16 are more prompt to autism spectrum disorder, followed by last born with mean score of 30.48, then followed by middle born with mean score of 26.39. A post hoc test multiple comparison was used then used to examine the differences in pupils autism spectrum disorder based on difference groups. (See Table 3).

TABLE 3: LSD post hoc comparative test of the difference between different groups of birth order and the rate of autism spectrum disorder

Birth order	First (n=16)	Middle (n=22)	Last (n=24)
First	32.16	5.77[b]	1.68
Middle	2.03*[c]	26.39	4.09
Last	0.60	1.60	30.96
Within 74.765			

a=Group mean along the principal diagonal
b = Mean difference above the principal diagonal
c= t-value below the principal diagonal
The information in Table 3 show the post hoc test multiple comparison result of Fisher's significant t-value of 2.03 which shows a significant difference in pupils autism spectrum disorder between pupils' who are first born and middle born. This imply that pupils' who are first born with mean of 32. 16 are more prompt to autism spectrum disorder. than their counterpart who are middle born with mean of 26.39. The nonsignificant t value of 0.60 and 1.60 shows no significant difference between pupils who are first born & those who last born, also middle born and last born respectively.

DISCUSSION OF FINDINGS

The result of hypothesis one revealed that there is a significant influence of gender on pupils' with autism spectrum disorder (ASD) . This is in line with the finding of Ratto, Kenworthy, Yerys, Bascom, Wieckowski, White and Anthony (2018) who found that girls with ASD exhibited fewer social and communication difficulties compared to boys. The finding agreed with the finding of Lai, Kassee, Besney, Bonato, Hull, Mandy and Ameis (2019) who found that females with ASD are more likely to have co-occurring mental health conditions compared to males with ASD.

The finding also agreed with Lehnhardt, Falter, Gawronski, Pfeiffer, Tepest, Franklin, and Vogeley (2016) who found that females with late-diagnosed ASD exhibited different cognitive profiles compared to males, with stronger verbal skills and weaker visuospatial abilities. The finding is in line with the finding of Wood-Downie, Wong, Kovshoff Mandy, Hull, and Hadwin, (2021) who found that girls engaged in more camouflaging behaviors than boys.

The result of hypothesis two revealed that there is a significant influence of birth order on pupils' with autism spectrum disorder (ASD). The finding is in consonance with the finding of Hoffmann, Windham,, Anderson, Croen, Grether, and Risch, (2014) who found a small but significant increased risk of ASD in firstborn children compared to later-born children. The finding is in line with Sandin, Otero, Magnusson, Surén, Schendel, Frigren, and Hellner Gumpert,(2020) who found that firstborn children had a slightly higher risk of ASD compared to later-born children. The finding disagreed with the finding of Böhm, and Seidler-Brandler, (2021) found no significant influence of birth order on autism spectrum disorder. The finding is in agreement with the finding of Zhang, Wu,Yang, Zhang, Ding, Zhou, and Zou, (2023) who found a significant influence of birth order on severity of autism spectrum disorder symptoms.

CONCLUSION

Autism Spectrum Disorder adversely affects a pupils' functioning and results in the need for specially designed instruction and related services. Gender and birth order were identified as factors that could influence pupils' with autism spectrum disorder. Based on the results of the study, it was concluded that gender and birth order significantly influence pupils' with autism spectrum disorder. Therefore, gender and birth order are very important factors and should be considered by all the stake holders in education in diagnosis pupils' with autism spectrum disorder in primary schools.

RECOMMENDATIONS

Based on the findings of this study, the following recommendations were made:

i) Recognize that the influence of gender and birth order on ASD may vary, and intervention strategies such as teaching the pupils skills for interacting with others, understanding social cues, and building relationships should be tailored accordingly.

ii)Stake holders in educators should develop gender-specific in supporting strategies to address the unique needs of male and female pupils.

iii). Stake holders in educators should develop birth order-specific support strategies to address the unique needs of different birth orders.

iv)Educators, healthcare professionals, and policymakers can better address the unique needs of pupils with ASD, taking into account the influential factors of gender and birth order, and ultimately improve their educational and developmental outcomes. =

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