ORIGINAL ARTICLE

Autism Spectrum Disorders in Calabar, Nigeria

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ABSTRACT

Objectives

Autism spectrum disorder (ASD) is a neurodevelopmental disorder that is prevalent worldwide. The incidence of autism has increased worldwide. However, there is a dearth of data in sub-Saharan Africa. The study is aimed at determining the clinical and socio-developmental profile of children with ASD in a tertiary hospital in Nigeria.

Materials & Methods

This study is a six-year retrospective review of the medical records of children who presented with clinical autism diagnoses at the Department of Pediatrics, University of Calabar Teaching Hospital. Relevant data were extracted from the medical records of those who met the diagnostic criteria. Descriptive statistics were presented in proportions, percentages, and tables.

Results

Of the 1806 children with neurological disorders seen in the clinic within the study period, twenty-eight were found to have symptoms of autism based on the American Psychiatric Association›s Diagnostic and Statistical Manual V (DSM -5) criteria, giving a prevalence of 1.6%. The mean age at diagnosis was 3.8 ±1.4 (range 2 to 10) years, with a male-to-female ratio of 3:1. About two-thirds of the children diagnosed were older than three years. Seven percent of the children had siblings with autism, 53.5% of children with autism in the study had hyperactivity as comorbidity, while seizures were found in 7% of cases.

Conclusion

The prevalence of ASD among children seen in Calabar is 1.6%. Hyperactivity, mental retardation, and seizure disorders are associated comorbidities in the study. Late presentation is a common feature in this facility. Thus, increasing awareness is essential to enhance early recognition, timely diagnosis, and appropriate intervention.

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Introduction

Autism spectrum disorder (ASD) is a neurodevelopmental disability characterized by a deficit in verbal and non-verbal communication, impaired social interaction, and the presence of restricted, repetitive patterns of behavior and interests (1). Symptoms of ASD often become apparent in the early developmental period of the child; however, social deficits and behavioral patterns might only be recognized later in childhood (2). The diagnosis of ASD is based on the American Psychiatric Association's Diagnostic and Statistical Manual of Mental Disorders V (DSM-5) criteria of 2013. There is now a single ASD spectrum based on the two domains (social communication and restricted, repetitive, or unusual sensory-motor behaviors).

The World Health Organization recognizes ASD as a growing global public health concern due to its rising prevalence (3). The global increase in the prevalence of the disorder has been attributed to increased recognition, awareness, and knowledge of it (4, 5). Other reasons include broadening the ASD definition, introducing changes in diagnostic criteria and screening tools, and shifting research methods (6, 7).

A recent systematic review and meta-analysis estimate the global prevalence of ASD at 0.6%, while the African prevalence was 1.7% (8). Only four studies from the African continent qualified for inclusion in this study. Even though this region has a population of nearly 1.5 billion, 40% of the population are children younger than 15 years. A review of ASD research in West Africa by Bakare et al. (9) identified a massive gap in epidemiology, among others. This dearth of information is due to the paucity of expert research on ASD. In addition, there is a low awareness of ASD in Sub-Saharan Africa with a resultant late diagnosis (1). No study has been done to document the prevalence of ASD in Calabar, a coastal city in South-south Nigeria, to inform evidence-based policy and practice. This study was therefore designed to determine clinical and socio-developmental characteristics of children with autism in Calabar, Nigeria.

Materials & Methods

Children seen in the neurology clinic with documented features of ASD during a six-year period were enrolled in the study. Diagnosis of ASD was based on the DSM-5 diagnostic criteria. Relevant data were extracted from the medical records of those who met the criteria. A child was regarded as having an autistic disorder when he showed evidence of difficulties, past or present, in each of three social communication subdomains and must have or have had difficulty in two of the four different restricted, repetitive sensory-motor behaviors. The following information was obtained from all the children that met the inclusion criteria: the biodata, family history of ASD, developmental record, school attendance, age at which deviations from normal behaviors/development were observed, age at first presentation to orthodox care and definitive diagnosis, and presence of comorbidities such as hyperactivity, seizures, and intellectual disabilities. Descriptive statistics were presented in proportions, percentages, and tables.

Results

Of the 1806 cases seen in the pediatric neurology clinic over the study period, twenty-eight cases were found to have the symptoms of ASD, giving a prevalence of 1.6%. There were twenty-one males and seven females, giving a male-to-female ratio of 3:1 (Table 1). The mean age at diagnosis was 3.8 ±1.4 (range 2 to 10) years, and most

Table 1. Socio-demographic Characteristics of children with ASD/ Timing of diagnosis

Variable	Proportion n=28	% (100)
Gender		
Male	21	75
Female	7	25
Age (years)		
<5	18	64
5-10	8	28.6
11-15	2	7.1
Time interval between Parental concern and Diagnosis		
< 6 months	3	10.7
6months – 1year	5	17.9
1-3 years	7	25
>3years	13	46.5
Age at diagnosis		
18months - 3years	9	32.1
>3years	19	67.9

(67.9%) of the cases were diagnosed after the age of three years (Table 1). The majority (twenty-four cases) (85.7%) could speak; however, most did not use speech as a tool for meaningful social interaction. The remaining four (14.7%) were non-verbal (Table 2). A family history of autism was present in 7% of cases. Nineteen (67.9%) of the twenty-eight autistic children had associated comorbidities, including hyperactivity (15 cases) (53.5%), intellectual disability (4 cases) (14%), and seizures (2 cases)(7%) occurring alone or in combinations.

Discussion

The prevalence of ASD in this study is 1.6%. It is similar to the findings of the study by Ahmad et al. in Northern Nigeria, who documented a prevalence of 1.4% in a hospital-based study (11) and a report of 1.1% in a community-based survey in Southern Nigeria (12).

Table 2. Social and developmental characteristics of the children with autism

Variable	Proportion	%
Birth position 1st or 2nd	22	78.5
Attends mainstream school	10	35.7
Siblings with a similar problem	2	7.1
Delayed motor milestone	4	14.3
Speech impaired	24	85.7
Not verbal	4	14.3

In a global systematic review and meta-analysis, Salri *et al.* (8) reported an African prevalence of 1.7%. In a similar study among Omanian children, a lower prevalence of 0.24% was recorded by Al-Mamri *et al*. (13) ethnic and cultural differences and underdiagnosis of cases may explain why the prevalence among the Arabia from Oman is lower compared to those of African descent.[14] Prevalence of autism is also influenced by the awareness of the condition and the availability of screening and diagnostic services.

The study shows that the number of males with autism is thrice that of females. It is in tandem with some Nigerian studies that showed a male preponderance (12, 15, 16). However, other studies recorded a female dominance (15, 17, 18). The reasons for this gender disparity are not clear. The female autism phenotype may play a role in girls being misdiagnosed, diagnosed later, or overlooked. Females are less likely to present with overt symptoms, further hindering a timely diagnosis (4, 6)

Autism can be diagnosed as early as 18 months of age (19). Globally, the mean age for ASD diagnosis ranges between 38 and 120 months (20). In this study, the mean age at diagnosis was forty-five months (3.75 years). It is similar to the findings of Lagunju in western Nigeria (15). Ahmad (11) reported that more than half of the cases were diagnosed after five years, with a mean age of 5.6 ±2.5 years. Surprisingly, this delay in diagnosis is not only peculiar to developing countries. A study in Germany showed that children received their ASD diagnosis on average at the age of 6.5 years, with an interval of 4.6 years from first parental concerns to diagnosis. However, in their sample, a significant portion of patients had Asperger syndrome, which is often diagnosed significantly later, resulting in a higher age of diagnosis (21, 22).

Delay in diagnosis could be attributed to poor knowledge/awareness about ASD, even among healthcare workers, as some of these children had presented to a medical facility a couple of times before the diagnosis of ASD was made (10). There is also a near absence of screening and surveillance for ASD in primary and secondary health facilities, especially in Low and middle-income countries. In addition, the shortage of trained personnel, healthcare, and intervention facilities plays a crucial role in delayed diagnosis. Furthermore, in the African setting, negative cultural beliefs and practices, fear of stigmatization by parents, tortuous pathway to care (in search of non-orthodox or spiritual help before seeking help from orthodox clinical practice), and poor help-seeking behavior are often associated with poverty and poor health insurance coverage (17). Delays of more than three years were found in the present study, from first parental concern to ASD diagnosis, which aligns with other studies. Early detection of ASD can lead to early treatment, which has been shown to improve later language and cognitive abilities and ameliorate the core symptoms (24, 25). Most of the cases in the present study had severe language impairment.

Many neurodevelopmental comorbidities have been reported to co-exist with ASD, most commonly epilepsy, hyperactivity, and mental retardation (11, 15, 26, 27). In this study, hyperactivity was the most common comorbidity identified in more than half of the cases, followed by mental retardation and epilepsy. It is similar to other reports (11, 28). However, Lagunju et al (15) found epilepsy to be the most common comorbidity in their study. Evidence indicates attention-deficit/hyperactivity disorder (ADHD) and ASD co-occur with a high frequency, such

that 20–50% of children with ADHD meet the criteria for ASD, and 30-80% of ASD children meet the criteria for ADHD. This comorbidity increases the possibility of a shared heritability of these disorders (29).

The present study found that 78.5% of children with ASD were first and second-birth orders. Ma et al. had similar findings and found a high prevalence of 86.4% of children with ASD were first and second-birth order. The reason for this occurrence is mainly unknown. A possible explanation is that couples could be reluctant to have further offspring following the detection of ASD in the first or second child due to the genetic implications of having another child with ASD. Seven percent of the children in the present study had a positive family history of ASD. One study reported a higher prevalence of 22.6% (15). The high incidence of ASD among siblings of autistic probands tends to strengthen the genetic heritability theory of ASD (12). The present study found that only 35.7% of the children were in mainstream schools. Others were either in special education or not in school. Research suggests that people with disabilities benefit from being integrated into classrooms with typically developing children (31).

In Conclusion

ASD is an uncommon neurodevelopmental disorder in our environment. It is commonly associated with other comorbidities, especially ADHD. Diagnosis of ASD is often delayed; there is, therefore, a need to raise awareness about ASD to enhance its early detection and appropriate interventions. Standardized screening for ASD is strongly recommended at 18 and 24 months of age and should be instituted in Nigeria's primary and secondary healthcare facilities with ongoing developmental surveillance. Establishing a national ASD register is necessary and will help with policy formulation, program development, and advocacy for this disorder.

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Author's Contribution

Conceptualization, Chimaeze Torty; Methodology, Chimaeze Torty; Resources and data extraction, Chimaeze Torty, Edet Usun; Formal Analysis, Chimaeze Torty, and Edet Usun; Writing—Original Draft Preparation, Chimaeze Torty, Asindi Asindi A; Writing—Review & Editing, Chimaeze Torty,Komomo Eyong, Asindi Asindi A and Edet Usun All authors have read and agreed to the published version of the manuscript.

Conflict of Interest

None

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