

Mini Review

Prevalence of Visual Impairment in Children with Autism Spectrum Disorder: A Mini Review

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Received: April 12, 2023**Accepted:** May 10, 2023**Published:** May 17, 2023**Abstract**

The association between Visual Impairment (VI) and Autism Spectrum Disorder (ASD) remains an important research topic among children suffering from developmental delays and disabilities.

The objective of this mini review was to evaluate previous literature on prevalence and etiology of visual impairment, frequency of visual impairment and types of refractive errors associated with autism in children.

Previous researches on ASD found that the visual impairment is one of the major factors in autistic children. Hence measurement of vision screening in autism disorder is necessary for better explanation of the problem.

The etiologies of visual impairment in autistic children were associated with refractive error and strabismus. Identification of refractive error in ASD children and providing them suitable corrective lenses may improve their visual functions and help in their daily activities.

With these findings in mind, there is an urgent need to investigate further in this area and developed more detailed research. The findings would help optometrist, ophthalmologist in understanding types of visual impairment in autism school children.

Keywords: Autism; Visual impairment; Refractive error; Blindness; Squint

Abbreviations: ASD: Autism Spectrum Disorder; VI: Visual Impairment; CDC: Center Control and Disease Prevention; CVI: Cerebral Visual Impairment; PVI: Peripheral Visual Impairment; ROP: Retinopathy of Prematurity

Introduction**Autism and Visual Impairment**

Autism Spectrum Disorder (ASD) is related to developmental changes in brain that may have problems with social interaction, communication, confined behavior and loss of interest in daily living activities. Autism prevalence is increasing worldwide over the last few years. According to the year 2020 data center control and disease prevention (CDC) report that 1 out of 36 children is diagnosed with ASD in US [1]. In Pakistan the exact prevalence is unknown but there may be 350000 children reported with ASD with higher prevalence in males, as compared to females [2].

There is a wide variance of autism prevalence depending on geographic location, diagnostic instruments, and public awareness regarding autism. It was in 1960 the researcher started working on autism statistics. Prevalence data for the period 1960-1980 were the first published. A prevalence of two per 10,000 people was recorded at this time [3-5].

Autism could be reported at the age of 18 months at very initial stages. ASD has evolved into a chronic disease that can impair an individual's quality of life and well-being [6].

The basic cause of ASD remains unknown while many studies emphasize genetic causes and some other studies also highlighting potential epigenetic and environmental factors [7].

Autism and autism-like clinical features and visual impairments have been studied since the first half of the 20th century. Since the first study of Keeler (1956) which described autism-like patterns in five preschool children who were totally blind due to Retinopathy of Prematurity (ROP), a growing number of researchers addressed the relationship between autism and visual impairment [4].

Butchart, M. and colleagues in 2017 conducted a review of seven studies on the occurrence of visual impairment in people with ASD. They found a higher incidence of strabismus (8.3%) than in a comparable neurotypical child population (1.5 to 5.3%). Eleven studies identified behavioral traits common to both autistic and visually impaired populations. Most were small screening studies using different methods, representing an emerging area of research (8).

Elisa Fazzi MD et al. conducted a study in 2017 at civil hospital of Brescia, Italy to assess the incidence and clinical features of autism spectrum disorder in visually impaired children. Total 273 were assessed in this study in which 217 were with cerebral causes of visual impairment and 59 had peripheral causes of visual impairment. They found that ASD was more common in the visually impaired than in the general population. The prevalence varied according to the type of visual impairment (2.8% for cerebral visual impairment and 8.4% for peripheral visual impairment) [9].

S. Chokron et.al studied the relationship between cerebral visual impairment and visual dysfunctions in autistic children to highlight the link between visual impairment and neurodevelopmental disorders, thereby implementing social and educational steps to deal with these problems [10].

Beena Thankappan & Fellows showed that out of 40 participants with ASD, 21 were seen with ocular abnormalities, with refractive errors occurring at 50% followed by strabismus at 7.50% [11].

Amin et al. conducted a study in 2021 at Oasis schools of autism, Lahore. Total 127 participants with ASD were assessed and reported that high prevalence of visual impairment in autistic children. The main cause of visual impairment was refractive errors (33.8%) and squint (15.7%). The study concluded that by conducting vision screening in school of autism optometrist/ ophthalmologist can help autistic children with their educational and every day activities [12].

According to the literature in this field, while the link between autism and visual impairment has attracted the attention of clinicians and researchers, some actions still need to be taken in the near future to fully understand this complex link.

Based on the limited literature, there is an evident relationship between ASD and different types of visual impairment related to refractive error and squint [4,8-11,13-16]. The distribution of data on prevalence of visual impairment and abnormalities in autistic children from above mentioned research studies is presented as pie chart (Figure 1 & 2).

Conclusion

There is limited global research to determine the frequency of visual impairment in autistic children. However, the available literature indicates a link between ASD and visual impairment, which can be treated with rehabilitation in addition to other treatment. School-based visual screenings for autism by ophthalmologists and optometrists can help children with their educational and daily living activities. Early detection of refractive problems in autistic children and provision of the proper corrective lenses may help them achieve optimal visual functioning and have a positive impact on their daily activities.

Author Statements

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Frequency of Refractive Error in ASD

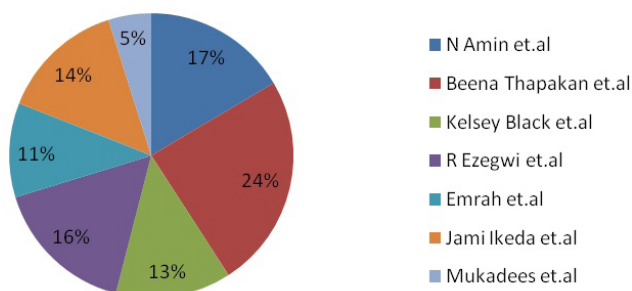


Figure 1: Pie chart showed the frequency of refractive errors among Autistic children.

Frequency of Squint in ASD

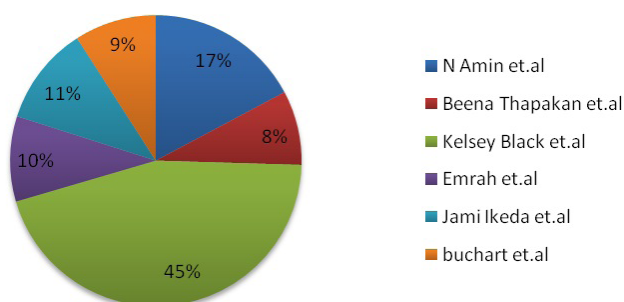


Figure 2: Pie chart showed the frequency of Squint among ASD.

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