

# Gross Motor Difficulties of Children with Autism at Proyash Institute of Special Education, Dhaka, Bangladesh

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## Abstract

**Introduction:** Autism is the fastest growing neuro-developmental disorder, characterized by Impaired Social Interaction, Qualitative Impairments in Communication Skills and Presence of restricted and repetitive patterns of behaviors, interests and activities. Children with ASD have several kinds of motor impairments and deficits from early childhood to whole life. **Method:** This cross-sectional quantitative study was conducted using Checklist of Gross Motor Screening for Children with Autism Spectrum Disorder, among 50 children, purposively collected from Proyash Institute of Special Education, Dhaka, Bangladesh in. The children were aged between 3 years to 11 years. **Result and Discussion:** This study observed 7 different domains of Gross Motor Functions among children with diagnosed ASD and found out that 100% of the children with ASD have difficulties with their Gross Motor Functions. The study revealed that among 50 children with ASD, significant difficulties were found in milestones in 48 children (96%), attention and restlessness in 50 children (100%), clumsiness and coordination in 49 children (98%) and bilateral integration in 45 children (90%). Fifty-two percent of children (26 children) weak or floppy arms or legs and 28% (14 children) have shown problems in posture. No difficulties in walking pattern in 80% children were found. Some other symptoms were found such as history of Delayed Milestone of Development in 5 children (10%) and Foot Deformity or Foot Flat in 9 children (18%). **Conclusion:** There are significant difficulties in gross motor functions among children with Autism Spectrum Disorder (ASD).

**Keywords:** Gross Motor Difficulties, Motor Function, Autism, Checklist.

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## Introduction and Background

Autism is the fastest growing neuro-developmental disorder. As per WHO, approximately 1% of world's population or 70 million are affected by autism.

The term autism spectrum disorder (ASD) refers to a range of neurodevelopmental disorders that include the diagnoses of autism, Asperger syndrome, and pervasive developmental disorder not otherwise specified (PDD-NOS). According to American Psychiatric Association, the diagnostic characteristics of ASD include difficulty with social interaction, delayed or limited development of communication skills, and restrictive patterns of behavior or interests. In addition to these characteristics, individuals with ASD may also experience delays or deficits in the development of motor behaviors. Specifically, when compared to individuals without ASD, individuals with ASD are more likely to have difficulties with balance, postural stability, gait, joint flexibility, and movement speed (Lang, R. et. al. 2010).

The prevalence of developmental disabilities in

US Children, aged between 3 to 17 years, increased from 12.84% to 15.04% over 12 years (From 1.9 to 7.4 per1000). Hearing loss showed a significant decline whereas Autism, Attention Deficit Hyperactive Disorder and other developmental delays increased (Boyle et al., 2011).

Like other development countries, Bangladesh has no data for many children or adults suffer from the lifelong debilitating developmental neurological condition like ASD. A pilot study (2013) in Bangladesh, utilizing community health workers, has found prevalence of all kinds of neurodevelopmental disability is 7.1%, whereas for ASD, the study indicates prevalence of 0.15%, 3% in Dhaka city and 0.07% in rural area (Global autism movement and Bangladesh (2014).

Three different studies (Mullick & Goodman, 2005, Rabbani et al., 2009 and NCDC, 2013) show that lifelong debilitating developmental neurological condition. The studies show that the prevalence of ASD ranges from 0.15-0.84% in Bangladesh (KOICA Autism Fellowship Program, 2017).

A cohort of 154 children with ASD presented motor impairment with account of Hypotonia (51%), Motor Apraxia (34%), Toe-walking (19%), Gross Motor Delay (9%) and Reduced Ankle Mobility (rare occurrence) (Ming et al., 2007).

Motor impairments in ASD manifest as both delays and deficits. Delay is found in fine motor and gross motor domains whereas deficits are found in praxis, coordination and gait. All of these affect other cognitive and behavioral domains. Insomnia (especially) and others Sleep disorders occur in 83% of children with ASD. One-third of children with ASD were reported of having Epilepsy; identification of genetic causes are under investigation (Jeste, 2011).

Parents in Bangladesh do not understand child's visible and invisible difficulties and they remain ignored and untreated at early age since parents are always aware about their unusual pattern of behavior, speech and communication that is disturbing their family and social life. During assessment, children with Autism shows motor difficulties such as tying their shoes, jumping, assembly, dancing etc. As children with Autism walk, even delayed or in unusual pattern, parents don't understand or they delay to understand this fact, that their children might have difficulties with motor planning and walking patterns which demands professional concern.

The motor difficulties are to be identified by professionals working with motor functioning (e.g. Physiotherapists). In Bangladesh, physical difficulties children with Autism remains ignored.

### Objective

The Gross Motor Difficulties among children with Autism Spectrum Disorder (ASD) at Proyash Institute of Special Education, Dhaka, Bangladesh were studied

by using "Checklist of Gross Motor Screening for Children with Autism Spectrum Disorder".

### Method

This cross-sectional quantitative study was conducted among 50 children, purposively collected from two sections of Proyash Institute of Special Education, Dhaka, Bangladesh in between June 2016 to May 2017. A five-sampled Pilot study was conducted prior to this research. The children were aged between 3 years to 11 years.

### Result :

This study measured Gross motor Difficulties using a "Checklist of Gross Motor Screening for Children with Autism Spectrum Disorder", which is formed according to books of Abraham, M.C. & Myers, D. (2002) and Kurtz, L.A. (2008), consisted of 7 domains and 74 checking points. The domains are milestone of typical gross motor development, Posture, weakness or floppiness of arms or legs, walking pattern, clumsiness and coordination, attention and restlessness and bilateral integration. This study found out that 100% of the children with ASD have difficulties with their Gross Motor Functions. The following table presents finding of Gross Motor Difficulties among children with ASD.

On the basis of finding, significant difficulties were found in milestones (96%), attention and restlessness (100%), clumsiness and coordination (98%) and bilateral integration (90%). Almost half of the children have weak or floppy arms or legs (52%) and 28% have shown problems in posture. In the domain of walking patterns, children with ASD have shown a good result - no difficulties in 80% children which differ from investigators clinical experience.

**Table 1: Prevalence of Gross Motor Difficulties in different domains**

Gross Motor Domains	Difficulties Present	No Difficulties
Milestone of Typical Gross Motor Development	48	02
Posture	14	36
Weakness or Floppiness of Arms or Legs	26	24
Walking Pattern	10	40
Clumsiness and Coordination	49	01
Attention and Restlessness	50	00
Bilateral Integration	45	05

### **Discussion:**

Different studies found that Autism Spectrum Disorder is more common in boys than girls; the found ratios are 3.1:1 (Nicholas J. S. 2008), 4:1 (Bartley, 2006) and 4.5:1 (JPUF, 2017). This study shows a resemblance with the fact; we found a ratio of 4:1 in 50 children.

Ninety six percent of children with Autism have shown difficulties in their milestone of gross motor functions.

Children with ASD have difficulties in, more prominently in ball throwing and catching, using stairs, jumping and cycling (Pusponogoro, H. D. et. al. 2016). This study found problems largely in skipping with alternating swings, standing on one foot for 10 seconds, riding two-wheeler, performing somersaults, running through obstacle course avoiding obstacles and hopping on foot.

Individuals with ASD showed a decreased functional balance and problems in postural maintenance (both static and dynamic) in infancy, usually persist in adulthood (Memari, A. H. et. al. 2014). In this study, forty-two children among 50 (84%) have difficulties with their balance in clumsiness and poor coordination domain and 24 children out of 50 (48%) showed problem in standing in one foot briefly under the milestone of typical gross motor development domain. No difficulties in walking pattern in 80% children were found. 4 children showed Unusual Walking pattern.

Some other symptoms were found during taking medical histories and physical examination which are difficult to check with the Checklist, but associated with Gross Motor Difficulties which demands further research and management. Some of the symptoms are Flat Feet or other Foot Deformity (9), Unusual Walking Pattern (4), Delayed Milestone of Development - Delayed Walking (4), Delayed Sitting (2), Delayed Crawling (1), Missed Crawling (3), Missed crawling (3), Delayed Birth Cry (3), Rocking Tendency (2), Poor Shoulder Stability (1) etc..

### **Conclusion**

There are significant difficulties in gross motor functions among children with Autism Spectrum Disorder (ASD).

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