



Original Article

Types of Repetitive Behaviors in Autism Spectrum Disorder

Noreen Fatima¹, Ayesha Ikram¹, Waje eha Abdulahad¹, Faiza Yousaf¹

¹*School of Allied Health Sciences, Children Hospital, Lahore, Pakistan

ABSTRACT

Background: Autism spectrum disorder is a neurodevelopmental disorder occurring in children. Each child on the spectrum has different behaviors. **Objective:** To identify different types of repetitive behaviors in patients with autism spectrum disorder. **Methods:** This study was carried out at the Children's hospital, The Institute of Child Health Centre and Rising Sun Institute DHA Lahore, Department of Developmental Pediatrics, Lahore. Purposive sampling was used to collect data through three months' period. It was a cross-sectional study including 32 children with autism spectrum disorder between the age of 3 and 15 years. The repetitive behavior scale was developed to identify different forms of repetitive. The data was analyzed using SPSS version 20 and data was analyzed using descriptive statistics and were presented in the form of tables. **Results:** Six forms of repetitive behaviors including stereotyped, self-injurious, compulsive, ritualistic, sameness and restricted behaviors and were evaluated in 32 children. Restricted behavior was most commonly present in a severe form in 17 (15.1%) children followed by sameness behavior in 15 (46.9%) children, and stereotyped behavior in 12 (37.5%) children, while compulsive behavior and ritualistic behavior were less commonly seen in 8 (25%) and 7 (21.9%) children, respectively and self-injurious behavior was seen rarely in only 3 (9.4%) children. **Conclusion:** Repetitive behaviors were seen in all children with autism spectrum disorder however the most prevalent forms are restricted, sameness and stereotyped behaviors. Early detection of behavioral abnormalities can aid in the early detection and treatment of autism spectrum disorder.

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***Corresponding Author:**

Noreen Fatima, School of Allied Health Sciences, Children Hospital, Lahore, Pakistan

Email: fatima292@gmail.com

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INTRODUCTION

Autism is a neurodevelopmental condition that is strongly linked to hereditary risk.¹ It is distinguished by difficulty with social contact, verbal and nonverbal communication, and a variety of repetitive and restricted behaviors.² Autism symptoms include not responding to their name by 12 months, not pointing at objects to show interest by 14 months, the absence of pretend play by 18 months, avoiding eye contact, difficulty understanding other people's feelings or talking about their own feelings, delayed speech and language skills, repeating words or phrases (echolalia), giving unrelated answers to questions, becoming upset by minor changes, obsessive interests, flapping their hand and rocking their body.³

Repetitive behaviors are one of the trio of symptoms associated with autism spectrum disorder (ASD) along with social and communication difficulties. In autism, restricted and repetitive behaviors (RRBs) are characterized by their topographical consistency across settings, inappropriateness and repetition. These behaviors span from low to high order, including stereotypy and self-injury, as well as compulsions, rituals/sameness and restricted interests.⁴

Stereotyped behaviors are meaningless movements or behaviors that are repeated in the same way such as body rocking, swaying, head nodding, flapping and clapping. Self-injurious behaviors are defined as movements or activities that have the potential to produce redness, bruising or other bodily harm and are repeated in the same manner, such as hitting or slapping the head, face or other body regions with a table, floor or other surface or items.⁵ Compulsive behaviors are repeated and performed in accordance with a rule, such as arranging certain objects in a specific pattern or location, requiring things to be symmetrical, checking doors, windows, drawers, appliances, clocks, locks, and counting items or objects to a certain number or in a specific manner.⁶ Ritualistic behaviors

include performing daily activities in a similar manner, such as strongly preferring to eat/drink only certain things, insisting that meal-related items be arranged in a certain way, insisting on a specific order of activities or tasks related to using the bathroom, washing, showering, bathing or dressing, arranging items in the bathroom in a certain way and insisting on wearing certain clothing items.⁷

Sameness behavior is characterized by reluctance to change and insistence on keeping things the same such as toys, materials, furniture, photos, and in the same location. Restricted behaviors have a narrow range of concentration, interest, or activity, such as fascination, obsession with one subject or activity and attachment to a single object.⁸

Early detection of ASD behavioral signs helps corroborate our knowledge of ASD development or pathophysiology. According to current studies, RBS is less prevalent in very young children with ASD than in social or communicative symptoms.⁹ Sensory characteristics are considered secondary to symptoms in autism. Sensory processing difficulties include hypo-responsiveness (a lack of reaction to sensory stimuli), hyper-responsiveness (an excess of sensitivity to sensory stimuli) and sensory seeking (craving for sensory stimuli).¹⁰ All seven sensory domains particularly auditory, tactile, visual, proprioceptive, and vestibular, can be compromised.¹¹

Several studies have been conducted to investigate the association between RBs and sensory response to environmental stimulus in people with developmental impairments and autism.¹² Tactile over-responsivity for example, has been linked to more inflexible stereotyped behaviors such as insistence on sameness and repeated verbalizations (i.e., unpleasant responses to tactile stimulation that is not noxious to most individuals).¹³ In ASD, fluorescent illumination caused visual over-responsivity and increased RBs as

compared to incandescent lighting.¹⁴ Further research has revealed that "attractive" sensory stimuli are associated with less stereotyped movements than unpleasant sensory stimuli.¹⁵ The purpose of the study was to find out the occurrence and frequency of different types of repetitive behaviors in Autism. This study explains several sorts of repeated activities in people with ASD. Early identification of behavioural issues can aid in the early diagnosis and treatment of autistic children.

METHODS

It was a cross-sectional study in which data was gathered from Department of Developmental Pediatrics at Children Hospital & ICH Lahore and the Rising Sun Institute for Special Children at DHA Lahore. The Repetitive Behavior Scale Revised (RBS-R)⁸ was utilized to collect data on several sorts of repeated behaviors. The sample size was 32 youngsters calculated from Raosoft including 30 boys and two girls. The study included individuals diagnosed with autism spectrum disorder ranging in age from 5 to 18 years. From May to September 2021, data was collected using the repetitive behavior scale and by interviewing parents of children with ASD and filling out a questionnaire. This study aided in the identification of several forms of repetitive behaviors in autistic youngsters. The statistical program for social sciences (SPSS) version 20 was used and data was analyzed using descriptive statistics and were presented in the form of tables.

RESULTS

A total of 32 children with ASD were selected for this study in which 30 were boys and 2 were girls and the age range for selected children was 3 to 15 years, most of the children (18) were in age range of 6-10 years (Table I). Total six types of repetitive behavior were observed in patients, in stereotyped behavior most common problem was sensory issues which were present in a

severe form in 12 children, other problems which were present in moderate and mild forms were object usage (spinning of objects), whole body (body rocking), head (rolling, turning) and hand/fingers (flapping, flicking, clapping) which were present in six children. Self-injurious behavior was not present in most of the patients, the only problems present were skin picking in two children and hitting themselves with body parts and objects in three children.

In compulsive behavior, most common problem was repeating a task (routines, up/downstairs clothes on/off) present in severe form in eight children, another common problem present in moderate and mild form in four and five children respectively was arranging behavior (Table II). The most common problem in ritualistic behavior was play leisure (insisting on specific play activities or following rigid routine during play leisure), which was present in severe form in seven children. Other problems included self-care activities (insist on specific order of activities), which was present in moderate form in five children and sleeping bedtime (insist on certain pre-bedtime activities) which was present in mild form in six children.

In sameness behavior, most common problem was resisting change in activities present in a severe form in 15 children, other problems were insisted walking in the same pattern and objects visiting new places which were present in moderate and mild form in nine and five children respectively (Table III). Restricted behavior was present in the highest frequency among other types of repetitive behaviors. All problems were present in the severe form attached to one specific object present in 17 children, fascination with one object/activity was present in 16 children, pre-occupation with parts of an object was present in 12 children and fascination with movement was present in the 10 children (Table IV).

Table I: Descriptive Statistics

Descriptive Data		Frequency	Percentage
Gender	Boy	30	93.75%
	Girl	2	6.25%
	Total	32	100.0%
Age range (years)	3-5	5	15.63%
	6-10	18	56.25%
	11-15	9	28.13%
	Total	32	100.0%

Table II: Frequency of Compulsive Behavior Problems

Compulsive Behavior	Not Happen	Mild problem	Moderate problem	Severe problem
Arranging	16 (50)	5 (15.6)	4 (12.5)	7 (21.9)
Completeness	24 (75)	2 (6.3)	3 (9.4)	3 (9.4)
Checking	27 (84.4)	1 (3.1)	1 (3.1)	3 (9.4)
Counting	30 (93.8)	1 (3.1)	0 (0)	1 (3.1)
Repeating	20 (62.5)	2 (6.3)	2 (6.3)	8 (25)
Touch-tap	26 (81.5)	2 (6.3)	2 (6.3)	2 (6.3)

Table III: Frequency of Sameness Behavior Problems

Sameness Behavior	Not Happen	Mild problem	Moderate problem	Severe problem
Insists same place of object	17 (53.1)	4 (12.5)	3 (9.4)	8 (25)
Object visiting new place	13 (40.6)	5 (15.6)	7 (21.9)	7 (21.9)
Insists walking in same pattern	10 (31.3)	4 (12.5)	9 (28.1)	9 (28.1)
Likes same things	21 (65.6)	0 (0)	0 (0)	11 (34.4)
Resists change in activities	12 (37.5)	1 (3.1)	4 (12.5)	15 (46.9)
Insists on same routine	18 (56.3)	1 (3.1)	2 (6.3)	11 (34.4)

Table IV: Frequency of Restricted Behavior Problems

Restricted Behavior	Not Happen	Mild Problem	Moderate Problem	Severe Problem
Fascination with one object	12 (37.5)	0 (0)	4 (12.5)	16 (50)
Attached to one specific object	13 (40.6)	0 (0)	2 (6.3)	17 (53.1)
Preoccupation with parts of objects	20 (62.5)	0 (0)	0 (0)	12 (37.5)
Fascination with movement	18 (56.3)	2 (6.3)	2 (6.3)	10 (31.3)

DISCUSSION

The study findings showed that repetitive behavior was present in all children with autism; the results showed a resemblance with previous studies. Arnott et al., in 2010¹⁶ investigated the frequency and pattern of a wide range of limited and repetitive activities in the second year of life. A community sample of 139 parents of normally developing children completed a repetitive behavior questionnaire 2. The study findings revealed a high frequency of certain types of repetitive motor actions in 15 month olds.

The findings have implications for the early diagnosis of illnesses characterized by limited and repetitive activities such as autism. Restricted and stereotyped behavior was most common during observation, the result is related to a study conducted by Matson *et al* in 2012.¹⁷ About 760 newborns with autistic, PDD-NOS, or without autism but at risk of other developmental delays or physical impairments were examined for the level of their stereotyped and ritualistic behavior utilizing

The baby and infants screen for children with autism symptoms (BISCUIT). According to the findings, infants with autism had the most stereotypic behavior, followed by those with PDD-NOS and atypical development.¹⁸ Gabriel's *et al* in

2008,¹⁹ had estimated association between confined, repetitive, stereotyped behaviors and interests, and aberrant sensory responses in children with ASD. Caregivers completed the RBS-R and the sensory profile. The study looked at the association between restricted, repetitive and stereotyped behaviors and interests and sensory responses in a group of 70 autistic children and adolescents.²⁰ The results revealed two groups: one with a low RBS score (min 2, max 43) and one with a high RBS score (min 44, max 95).

The small sample size and less time duration, measurements based only on caregiver reports and most of the children selected were receiving treatment for a long time and repetitive behaviors being controlled a lot by the treatment are some limitations of this study. Further research is required for the investigation of repetitive behaviors as these behaviors are core features of autism and can help in the early diagnosis of autism. The study should include standardized clinical observation of repetitive behaviors for more accurate results.

CONCLUSION

The study concludes that repetitive behaviors are present in all children of autism spectrum disorder but among all types of repetitive, restricted, stereotyped

and sameness behavior are most common, while the compulsive and ritualistic behavior are less common and self-injurious behavior is seen in few children.

DECLARATIONS

Consent to participate: Written consent had been taken from patients. All methods were performed following the relevant guidelines and regulations.

Availability of data and materials: Data will be available on request. The corresponding author will submit all dataset files.

Competing interests: None

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REFERENCES

1. Dawson G. Early behavioral intervention, brain plasticity, and the prevention of autism spectrum disorder. *Development and psychopathology* 2008; 20(3): 775-803.
2. Association AP. *Diagnostic and Statistical Manual of Mental Disorders*, 4th Edition: Primary Care Version Washington DC: American Psychiatric Association 1995.
3. Johnson CP. Early clinical characteristics of children with autism. *Autistic spectrum disorders in children: CRC Press*; 2004: 86-121.
4. Carcani-Rathwell I, Rabe-Hasketh S, Santosh PJ. Repetitive and stereotyped behaviours in pervasive developmental disorders. *Journal of Child Psychology and Psychiatry* 2006; 47(6): 573-81.
5. Ospina MB, Krebs Seida J, Clark B, et al. Behavioural and developmental interventions for autism spectrum disorder: a clinical systematic review. *PloS one* 2008; 3(11): e3755.
6. Berkson G. Early development of stereotyped and self-injurious behaviors: II. Age trends. *American Journal on Mental Retardation* 2002; 107(6): 468-77.
7. Sharma SR, Gonda X, Tarazi FI. Autism spectrum disorder: classification, diagnosis and therapy. *Pharmacology & therapeutics* 2018; 190: 91-104.
8. Lam KS, Aman MG. The Repetitive Behavior Scale-Revised: independent validation in individuals with autism spectrum disorders. *Journal of autism and developmental disorders* 2007; 37(5): 855-66.
9. Volkmar Fred R. Issues in the Classification of Autism and Related Conditions. *Handbook of Autism and Pervasive Developmental Disorders, Cilt 1, Diagnosis, Development, Neurobiology, and Behavior*, 3. Baskı, FR Volkmar, R Paul A Klin. John Wiley & Sons, Inc; 2005.
10. Ben-Sasson A, Hen L, Fluss R, Cermak SA, Engel-Yeger B, Gal E. A meta-analysis of sensory modulation symptoms in individuals with autism spectrum disorders. *Journal of autism and developmental disorders* 2009; 39(1): 1-11.
11. Boyd BA, Baranek GT, Sideris J, et al. Sensory features and repetitive behaviors in children with autism and developmental delays. *Autism Research* 2010; 3(2): 78-87.
12. Baranek GT, Foster LG, Berkson G. Tactile defensiveness and stereotyped behaviors. *The American Journal of Occupational Therapy* 1997; 51(2): 91-5.
13. Boyd B, Baranek G. Sensory Questionnaire (SQ). Unpublished manuscript, University of North Carolina, Chapel Hill, NC 2005.
14. Colman RS, Frankel F, Ritvo E, Freeman B. The effects of fluorescent and incandescent illumination upon repetitive behaviors in autistic children. *Journal of*

Autism and Childhood Schizophrenia 1976; 6(2): 157-62.

15. Hazen EP, Stornelli JL, O'Rourke JA, Koesterer K, McDougle CJ. Sensory symptoms in autism spectrum disorders. *Harvard review of psychiatry* 2014; 22(2): 112-24.

16. Arnott B, McConachie H, Meins E, et al. The frequency of restricted and repetitive behaviors in a community sample of 15-month-old infants. *Journal of Developmental & Behavioral Pediatrics* 2010; 31(3): 223-9.

17. Matson JL, Dempsey T, Fodstad JC. Stereotypies and repetitive/restrictive behaviours in infants with autism and pervasive developmental disorder. *Developmental Neurorehabilitation* 2009; 12(3): 122-7.

18. Mukherjee SB. Autism spectrum disorders—diagnosis and management. *The Indian Journal of Pediatrics* 2017; 84(4): 307-14.

19. Gabriels RL, Agnew JA, Miller LJ, et al. Is there a relationship between restricted, repetitive, stereotyped behaviors and interests and abnormal sensory response in children with autism spectrum disorders? *Research in autism spectrum disorders* 2008; 2(4): 660-70.

20. Doehring P, Reichow B, Palka T, Phillips C, Hagopian L. Behavioral approaches to managing severe problem behaviors in children with autism spectrum and related developmental disorders: a descriptive analysis. *Child and Adolescent Psychiatric Clinics* 2014; 23(1): 25-40.