

## Effect of Premenstrual Period on symptoms of Autism

Ms. Shreya Upadhyay<sup>1</sup>, Mr. Akash Vishwakarma<sup>2</sup>

### ABSTRACT

It is difficult to deal with challenges that accompany Autism. Additional difficulties faced by females with autism include menarche and the distress of going through a menstrual cycle. The aim of the study was to investigate the aggravation of symptoms of autism during the premenstrual period. 20 participants were taken as a sample from special schools of Vadodara, Gujarat. The parents of participants were given Indian Scale for Assessment of Autism (ISAA) to trace the increase in symptoms of autism during Premenstrual Period. After the data collection, statistical analysis was done where descriptive statistics and paired sample t-test was computed. The results indicate that females with autism go through severe difficulties during the premenstrual period compared to other days. It was also observed that some symptoms of autism aggravate during the premenstrual period in areas of emotional responsiveness, behavioural patterns, and sensory aspects.

**Keywords:** *Autism Spectrum Disorder, Indian Scale for Assessment of Autism, Premenstrual Period, Emotional Responsiveness, Behavioural Patterns, Sensory Aspects*

Autism Spectrum Disorder (ASD), also known as Pervasive Developmental Disorders (PDD), is a phenotypically heterogeneous group of neurodevelopmental syndromes with polygenic heritability characterized by a wide range of deficits in verbal and nonverbal communication, repetitive and controlled movements and impaired social reciprocity. Clinical features of Autism spectrum disorder mark impairments in three essential domains: social communication, constrained and repeated behaviour patterns and atypical language regulation and development.

Conditions that form the spectrum of autism differ in age of onset, the severity of symptoms and other features such as specific language delay and intellectual disability. The manifestation of the autism spectrum may vary from child to child. Despite having consistent and strong commonalities in social deficits, no single behaviour is specifically typical of ASD. Similarly, there is no behaviour that would naturally exclude any child from diagnosis of ASD. (Zimmerman, n.d.)

<sup>1</sup>M.Phil Trainee, Dept. of Clinical Psychology, Amity University, Madhya Pradesh, India

<sup>2</sup>Assistant Professor, Dept. of Clinical Psychology, Amity University, Madhya Pradesh, India

\*Responding Author

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In several instances, ASD is associated with medical conditions such as congenital rubella, infantile spasms, cerebral lipidosis, tuberous sclerosis, and fragile X syndrome. However, behavioural factors are recommended to determine the diagnosis of ASD regardless of the absence or presence of other associated medical conditions, which should be coded separately. If Intellectual Disability (previously known as mental retardation) is present, it should be coded separately as it is not one of the global features of ASD. According to the International Classification of Diseases' 10th version (ICD)- 10, Pervasive Developmental Disorders can be classified into the following eight categories. (*The ICD-10 Classification of Mental and Behavioural Disorders*, 1992).

As difficult as it is to deal with challenges that accompany Autism, additional difficulties faced by females of ASD include menarche, the distress of going through a menstrual cycle and access to accurate and safe gender-age and disorder-specific healthcare and education. Rather than being a singular event, puberty is an everyday- experience- a progression towards adulthood. Puberty is a transition period and a procedure of familiarizing oneself with one's changing hormones and developing a body, going through a challenging and dynamic social environment, to develop diverse cognitive skills and a perplexing period of being a child and an adult at the same time. Compared to a neurotypical child, a child with Autism may experience supplementary physical, behavioural and mental health issues. Such an intersection remains unexplored in developing countries such as India. (Eriksen, 2016).

A survey was conducted by Robyn Steward et al. in 2018, which included a series of demographic details about the females including sex, age, and Autism related details. Following which, details regarding participants' growing up and menstruation were taken. Convenience sampling method was used to recruit the participants (Using social media and website posts). Out of 459 participants, 237 participants ranging from 16 to 60 years, gave the complete responses (Autistic=123; Non-autistic=114). Many symptoms were observed to be overlapping with the non-autistic participants, but they also reported to have some distressing and distinct issues related to menstruation such as emotional and behavioural regulation, sensory difficulties, which impact their lives negatively. These discoveries require further research on the potential antecedents, corresponds and outcomes of issues identified with the menstrual cycle in people with Autism (Steward, Crane, Mairi, Anna, & Elizabeth, 2018).

## **METHOD**

### *Sample*

20 females diagnosed with autism were taken as sample for the study. Females above 12 years of age were taken as a sample. Autism sample was shortlisted and school authorities were approached for the proposed study and explained everything in detail. The patients who fulfilled the exclusion and inclusion criteria were taken up for the study. Six participants were excluded due to hysterectomy (removal of the uterus) and two participants were excluded due to the condition of Amenorrhea.

### *Instruments*

*Two tools were used for this study:*

#### **1) Socio-demographic questionnaire**

Socio-demographic sheet consisted of basic details including name, age, education, height, weight, language, religion, residence, details about parents and siblings, Family type, etc. It also included basic questions about the participant's diagnosis, age of diagnosis informant's relationship with the participant and age of menarche.

## 2) Indian Scale for Assessment of Autism (ISAA)

ISAA is developed by the service of social equity and acceptance. It is a tool to screen Autism and it comprises of 40 statements which are to be rated on a Five-point scale that ranges from 1 to 5 (never to always). ISAA is divided into six subdomains.

### Procedure

An observer rated prospective study was conducted over 2 month periods from different special schools of VADODARA city. Then parents were explained about the objectives and procedures of the study. Following which written informed consent and disseminating information was obtained from the parents. Parents were given socio-demographic forms to fill and parents were informed that Consecutive two months (Two Menstrual Cycles) will be the observation period for the study. Parents were given ISAA scale for 60 days to fill. After two months, the data was collected from the parents of 20 participants. Based on DSM-V criteria, 7 days prior to the onset of menses was counted as Premenstrual Period and ending of menses was considered as ending of Premenstrual Period. The recording of raw data was analyzed using the SPSS software. These findings were discussed with the parents/caregivers, school and concerning authorities. Descriptive statistics were used for the socio-demographic variables. Paired sample t-test was carried to find out the difference between the baseline period and premenstrual period for the ISAA scale.

## RESULTS

After the completion of the data collection, the obtained data was organized and analyzed. The interpretation of the analyzed data is as follows:

*Table 1 showing the age-related variables of Females with Autism*

	Mean	SD
Age	20.70	±6.071
Age of Diagnosis of Autism	2.95	±1.116
Age of Menarche	13.75	±1.943

According to table 4.1, the mean age of Participants who were taken for the study was found to be 20.70. Dispersion from normal was found to be 6.071 for the age of participants. The mean age of diagnosis of Autism was found to be 2.95 and the Standard Deviation was found to be 1.116. The mean age of menarche for the participants was found to be 13.75 and the Standard Deviation was found to be 1.943.

*Table 2 Comparison of ISAA total and subdomains between Baseline period (non-premenstrual period) and Premenstrual Period in females with autism.*

Variables	Baseline Period Mean±SD	Premenstrual Period Mean±SD	t	df	p
ISAA Total	91.50±17.08	106.50±17.82	2.71	38	.010**
SRR	24.20±8.48	27.20±7.94	1.15	38	.256
ER	11.50±4.07	14.45±4.31	2.22	38	.032*
SLC	12.20±5.74	14.15±5.40	1.1.6	38	.276
BP	18.25±5.35	22.15±6.52	2.06	38	.046*
SA	16.95±5.10	20.15±5.12	1.97	38	.055*
CC	8.40±3.45	8.40±3.20	.001	38	1.00

\*\* $p=0.01$ , \* $p>0.05$

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Table 4.4 shows the Comparison of ISAA subdomains between Baseline (non-premenstrual Period) and Premenstrual Period in children with autism using paired sample t-test. A significant difference was found in ISAA total at 0.01 level. Also, significant difference was found in Emotional Responsiveness, Behavioural Patterns and Sensory Aspects between Baseline and Premenstrual Period at 0.05 level in females with autism which indicates that there are 95% chances of aggravation of overall symptoms of Autism especially in Emotional Responsiveness, Behavioural Patterns, and Sensory Aspects.

### DISCUSSION

Menstruation can be a difficult transition in the life of a neurotypical woman; it is, therefore, self-explanatory that when exacerbated by a developmental disability, the experience of this biological mechanism can be extremely overwhelming. The focus of this study was to trace down the different experiences, females on the autism spectrum, go through during menstruation. In the current study, we wanted to find out whether symptoms of Autism are being aggravated during Premenstrual Period.

From the scores of Indian Scale for Assessment of Autism, it was observed that some of the symptoms of autism get aggravated during the premenstrual period which also includes days of menstruation. Due to the episodic nature of some symptoms such as aggressive behaviour or self-injurious behaviour, aggravated symptoms during the premenstrual period may go overlooked as they may be considered as everyday behaviour. When it was keenly observed by the parents during two months of the observation period, they realized there was much difference in the severity of symptoms of autism during the premenstrual period. A survey was conducted by Robert Steward, Laura Crane, Eilish Mairi Roy, Anna Remington and Elizabeth Pellicano in 2018 which mentioned that menstruation exacerbate autism-related challenges and the symptoms worsen dramatically which makes life much more difficult to manage during menstruation for females with Autism Spectrum Disorder (Steward et al., 2018). A Survey was conducted by Hamilton et al. in 2011 which was web-based, gathered data on socioeconomics, diagnosis of ASD, Menstrual history, menstrual cleanliness, dysmenorrhoea, and PMS. The result of the survey found out that there was an increase in Autism specific behaviours during menstruation in 24(33%) females.(Hamilton et al., 2011)From the results, it was found out that there was a significant difference in overall symptoms of autism between baseline and premenstrual period and hence the null hypothesis was rejected.

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Emotional Responsiveness patterns of people with autism is difficult to understand as it keeps shifting and it can be a little difficult to predict any emotional response to the stimulus. It was hypothesized that there will be no significant difference in Emotional Responsiveness between baseline and premenstrual period. Based on results it was found out that significant difference was found in Emotional Responsiveness in areas such as inappropriate emotional response where females express the inappropriate degree of emotional response such as excessive crying or laughing to irrelevant stimulus. It was also observed that during the premenstrual period, an unpredictable shift in emotions was present where they may be agitated, excited or distressed for no reason. They also show exaggerated emotions during the premenstrual period which can sometimes lead to uncontrolled behaviour. Due to these patterns of emotional shifts, it is difficult to control the person with autism and when there is added condition of hormonal changes during premenstrual period and menstruation, it would become even more difficult to predict.

It was observed that major significant difference was found between baseline and premenstrual periods in behavioural patterns of autism where the behaviours being aggravated during the premenstrual period are repetitive and stereotyped motor activities which include body rocking, flapping of finger or hands which are self-stimulatory motor behaviours. Other significant behaviours were found to be heightened restlessness or hyperactivity during the premenstrual period which makes it difficult for other people to control them and it also interferes with their performance on tasks and learning. Aggressive behaviours such as kicking, hitting and pinching May also increase during the premenstrual period which can be due to unprovoked anger. Due to this anger, some females also throw more temper tantrums which include screaming, yelling and head banging. It was also found out that there was an increase in self-injurious behaviour during the premenstrual period which is hitting self, biting and mutilating self.ict and control the emotional responsiveness.

### CONCLUSION

It was concluded from the current study that females with autism go through heightened difficulties during the premenstrual period which includes days of menstruation. It was also concluded that some symptoms of autism aggravate during the premenstrual period which are emotional responsiveness, behavioural patterns, and sensory aspects.

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### ***Conflict of Interest***

The authors carefully declare this paper to bear not a conflict of interests

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