



A Survey Study to Assess the Role of Ahara –Vihara of Mother during Pregnancy in Children with Autism Spectrum Disorders

Nithya AK¹, Anoop AK², Arun Vaidya³, Sandhya CV⁴

1. Assistant Professor, Dept. of Kaumarabhritya, M.V.R Ayurveda Medical College, Parassinikkadavu,
2. Ph.D. Scholar, Department of Samhita and Siddhant, Parul Institute of Ayurved, Parul University, Vadodara, Gujarat, India
3. Professor, Dept of Samhita & Siddhant, Parul Institute of Ayurveda, Parul University, Vadodara, Gujarat.
4. Medical officer, GAD Thennala, Malappuram, Kerala, India.

Correspondence Email: drnithyaak89@gmail.com

ABSTRACT

Autism Spectrum Disorder (ASD) is a neuro -developmental disorder. It is defined by deficits in social reciprocity and communication and by unusual restricted, repetitive behavior. In Ayurveda the concept of Garbhapurva Paricharya and Garbhini Paricharya were elaborated with utmost importance to get a good progeny. The facts explained include the dos and don'ts in the form of AharaVihara to be followed during pregnancy and even before pregnancy. The etiology of ASD remains unclear and the reported brain abnormalities among children with ASD indicate a probable link with disturbances in the in-utero period. Hence, it becomes logical to explore the antenatal risk factors of ASD, which is the reason for selecting "A survey study to assess the role of AharaVihara of mother during pregnancy in children with Autism spectrum Disorders". Materials and Methods: An observational study was conducted in 100 Autistic children at Northern parts of Kerala in the year 2018-21. The data regarding Ahara and Vihara during pregnancy were collected from the parents by using Questionnaire. Observations and Results: In Model summery, 67.8% are the risk factors of Autism and also got the significant result in severity of Autism and the risk factors by the ANOVA test. Through regression Analysis one can predict the susceptible to develop autism and by the Chi Square test found the association between risk factors and severity of Autism. Conclusion: Proper education before conception especially regarding dos and donts regarding AharaVihara and taking preconceptional care is the need of the era to avoid unwanted pregnancies and also to confirm the quality of sperm and ovum before conception to pursue a healthy and good progeny.

Keywords: Autism Spectrum Disorders, Ahara Vihara, Garbhiniparacharya, Garbhopaghatakarabhavas.

Received 06.11.2022

Revised 12.01.2023

Accepted 27.01.2023

INTRODUCTION

Autism Spectrum Disorder is defined by deficits in social reciprocity and communication and by unusual restricted, repetitive behavior. It begins in early childhood and characterized by qualitative impairment in communication skills, social interaction, reciprocity, imagination and play.[1] Prevalence estimates for Autism Spectrum Disorder (ASD) have been increasing over the past few decades, with estimates at about 5 in 10,000 in the 1960s and current estimates as high as 1 in 88.[2] It is the world's third most common developmental disorder, so to spread awareness every year 2nd April is marked as World's Autism Day. [3]. In Ayurveda the concept of *Garbhiniparacharya* [4] and the harmful effect of *Garbhopaghatakarabhavas* [5] were elaborated with utmost importance to get a good progeny. The facts explained includes the dos and don'ts in the form of *AharaVihara* to be followed during pregnancy and even before pregnancy. It shows the indirect link of the mother's physical and mental status and the quality of the progeny. While coming to the Ayurvedic view the majority of clinical features of different varieties of autism spectrum disorders resemble the features of *Unmada*. [6] This study reviews the *AharaVihara* of a lady having an Autistic child retrospectively using a questionnaire containing the questions exploring the *AharaVihara* during the pregnancy of the Autistic child. To study the role of *AharaVihara* of mother during pregnancy in children with ASD mentioned in Ayurvedic classics.

MATERIAL AND METHODS

Source of Data

Literary source:

All the Ayurvedic, modern literatures and contemporary texts including the journals, websites were reviewed and documented about the subject for the intended study.

Method of collection of Data

An observational study was conducted in the year 2018-2021 at northern and middle part of Kerala. Minimum of 100 children fulfilling the diagnostic and inclusion criteria of either sex were selected from different parts of Kerala attended for treatment at eminent paediatric treatment centres of Kerala. The data regarding *Ahara* and *Vihara* during pregnancy were collected from the parents of these Autistic children using Questionnaire.

Study type : Observation study
 Study design : Descriptive Cross sectional study
 Method of sampling : Simple random sampling
 Sample size : 100
 Study centre : Northern and Middle part of Kerala

Diagnostic Criteria:

Children were diagnosed on, Indian scale for assessment of Autism-ISSA and Questionnaire

Inclusion criteria:

- i. Children between the age group 2-10 years, irrespective of sex, caste, religion were included.
- ii. Children with mild, moderate and severe cardinal symptoms.

Exclusion Criteria:

- i. Mothers who were not willing to give informed consent
- ii. Children with other systemic disorders.

RESULTS

Table 1 - Model Summary

c	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.823 ^a	.678	.349	.60300

Here R Square is found to be 0.678 which signifies that 67.8% are the risk factors for Autism.

Table 2 - Severity Of Autism And The Risk Factors

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	37.493	50	.750	2.062	.006 ^b

ANOVA test shows that here F value is 2.062 and P value is .006. So, here P value is less than .01, So it is significant. The model developed in this regression analysis was statistically significant with an F value 2.062 value is less than .01

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)
Pearson Chi-Square	7.213 ^a	2	.027	.030

Table 3- Menstrual history and Severity of Autism

Severity of Autism and menstrual history of mother was tested by using Chi-square to see the association between the factors. So here P value found to be .027. So it is significant because the P value is less than .05.

Table 4 -Severity of Autism and Hereditary

	Value	Df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)
Pearson Chi-Square	6.255 ^a	2	.044	.043

Severity of Autism and Hereditary was tested by using Chi-square to see the association between the factors. So here P value found to be .044. So it is significant because the P value is less than .05

Table 5- Severity of Autism and Medication supplements taken by the mother during pregnancy

	Value	Df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)
Pearson Chi-Square	6.031 ^a	2	.049	.052

Severity of Autism and Medication and supplements taken by the mother during pregnancy was tested by using Chi-square to see the association between the factors. So here P value found to be .049. So it is significant because the P value is less than .05

Table 6 -Severity of Autism and Egg taken by the mother during pregnancy

	Value	Df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)
Pearson Chi-Square	9.716 ^a	4	.046	.037

Severity of Autism and egg taken by the mother during pregnancy was tested by using Chi-square to see the association between the factors. So here P value found to be .004. So it is significant because the P value is less than .05

Table 7-Severity of Autism and history of seeing sunset, solar, lunar eclipse

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	6.843 ^a	2	.033

Severity of Autism and history of seeing of sunset, lunar, solar eclipse during pregnancy was tested by using Chi-square to see the association between the factors. So here P value found to be .033. So it is significant because the P value is less than .05

DISCUSSION

Gender of children

In this study the Sex wise distribution of 100 patients of Autism spectrum disorders showed that maximum 73% were boys and the rest 27% were girls. One of the most consistent findings in research on ASD is this higher rate of ASD diagnosis in males than females. Two major ideas have been stated to explain this male dominance, out of which Female Protective Effect (FPE) seems more impressive. In the FPE model, girls require a greater etiological load to manifest autistic behavioral impairment due to genetic and other strong hormonal supports. [7,8]

Paternal age and maternal age at the time of conception

As observed in the study, diagnosis ASD falls more in parents between the ages of 30 to 40years when compared to other age groups. Changes in chemical tags on sperm DNA in men and the number of de novo mutations in egg cells in females increases with the age [9]. So this shows that there is a link among the parental age and Autism. In Ayurveda classics, the ideal time for marriage and conception is below 25, hence, they should attempt for achievement of conception.

Menstrual history of mother

53% mothers of my studied children had irregular menstruation before conception. Regular menstruation with adequate bleeding indicates the general health status of the mother and healthy ovulation. Which indirectly reveals that the studied groups of children were derived lives from the sperms and ova which were qualitatively compromised.

Habits like smoking and drinking of parents

62% of fathers had habits like smoking and drinking in my survey study. This implies 62 % of the mothers were passive smokers. One of the significant causes of ASD is prenatal exposure of smoking and drinking of parents. Alcohol passes through the fetal barrier between blood and brain and its effects on cerebral development are extremely complex. [10]

Medication of Mother just prior to conception for other sickness (UTI, Bronchial asthma, Dermatological diseases)

Teratogen is a substance that affects with the normal development of a fetus. The women are usually unaware she is pregnant and inadvertent drug ingestion may occur. The mother has taken the drug before implantation, (roughly prior to her expected menstrual period), there will be a little danger of malformation. The women unaware of pregnancy and inadvertent drug reaction when they were on medication like Bronchial asthma, Dermatological diseases, UTI before 3 months of conception was there in 56% of the study population. These drugs intake may be functioned as a predisposing factor for developing ASD

Planning of pregnancy

Planning the pregnancy can help to get a healthy progeny. “A healthy baby from a healthy mother” which implies the physical and mental health of the mother should be confirmed before pregnancy. In classics also it is highlighted that *Garbhadharan* should do with *Soumya Manas* [11]. The born child emulates the character of creature who comes in thoughts of the woman during coitus /fertilization .For achievement of conception happy mood is essential. Unintended pregnancy can have negative effects on the pregnant mother and the child. It leads to delayed prenatal care, increased risk of maternal depression and anxiety. This may affect the physical and mental quality of the progeny. Among the 100 couples, 54% of the pregnancy of the studied mothers were not planned which also reveals the importance of planning a pregnancy.

Hereditary / similar disease in the family

ASD is mostly genetically heterogeneous and caused by both inheritable and de novo gene variation. ASD is estimated to be 40-80% heritable. Inferences from genetic epidemiological study suggest that ASD is one of the most heritable of all psychiatric conditions. 56% of the studied couples had a history of hereditary / similar disease in the family proves this point. In *AtulyagotriyaAdhyaya* it has been clearly mentioned that marriages two similar *Gotras* should be avoided, otherwise it leads to congenital deformities in children[12].

Ahara of mother during pregnancy

Among 100 mothers, 93% were non vegetarian, 86% were taken snacks like biscuits, cake etc. frequently. 74% had taken egg every day, 43% had meat in every day, and 51% had fish in every day in their Gestational period. When a pregnant woman consumes continuously the diet, capable of aggravating *Vata*, then causes abnormalities due to *Vayu*. Many of the food items were dried in nature and are made by frying in oil, which are *Vatala* in nature, it may lead to *Vataprakopa*. Some food items are made up of fermented flour and they are *Ushnanain Virya*, *Kaphapittaprakopana*, *Vidahi* and *Guru* in nature. Fried foods were also *Vidahi* and *Ruksha a* in nature. These foods can cause vitiation of *Doshasand Muka*, *Minmina* like congenital problems in the progeny [13]. *Charaka* says that the pregnant woman should avoid excessive use of pungent things.[14] Recent study at Qatar University reveals that consuming more than 50 gm. of spice per day may increase the risk of cognitive function. Consumption of spicy food during pregnancy can lead to miscarriage and congenital disabilities

Accustomed position during pregnancy

21% of the mother sat in abnormal position always and 45 % were occasionally sat in abnormal position for a long-time during pregnancy. This was happened due to the lack of awareness about the importance of maintaining normal positions in pregnancy. Abnormal position may lead to umbilical cord around the neck of the fetus and troubles it in the intranatal and perinatal periods

Suppression of urges during pregnancy

According to *Charaka* and *Vagbhada* the suppression of urges may lead to severe health problems in both mother and child like intrauterine death, improper nutrition which in turn causes many congenital anomalies. *Bhela* also has enumerated, *Beejadosh* of father and mother, absence of use of beneficial *Rasas*, suppression of natural urges and *yoni dosha* as causative factor for both infertility and teratologic abnormalities [15]. Due to the suppression of urges the *Vata* will vitiated and cause defects in progeny. Proving this, 71% of my respondents occasionally suppressed the natural urges like urine, defecation, and flatus.

Strenuous works during pregnancy

32% of the respondents has underwent strenuous works occasionally and 44% of the participants has underwent trauma and compression in lower abdomen occasionally during pregnancy. *Charaka* says that pregnant woman should avoid excessive exercise or violent activities which may lead to problems in both mother and offspring. [16]. A woman's body undergoes many changes due hormonal effects during pregnancy to support the uterus. Hormonal action loosens up ligaments, and increases the volume of the chest and abdominal cavity.

Travelling by jerky vehicles during Pregnancy

The change in the social fabric has also urged female population to undertake strenuous and prolonged journey Most of these situations cited have been principally implicated in *vaigunya* of *Apanavayu*. The manifestation of *Apanavayuvaigunya* varies from mild cases of constipation to severe cases of mental disturbances. One of the prominent factors highlighted as cause of *Apanavaigunya* is *Atiyana*.

Listening of unpleasant words/abuse during Pregnancy

Child recognizes voice at around week 18 of pregnancy and at 26 weeks baby will react to noises both inside and outside the mother's body and may be soothed by the sound of mother's voice; hearing unpleasant word will transmit a negative energy and will affect the child which may become an envious anti-social element when born. Maternal stress susceptibility interacts with prenatal stress exposure to affect offspring's neurodevelopment. Psychological stress during pregnancy has an important role in developing behavioral and developmental outcomes in humans .72% of the mothers of the studied population had an experience of exposure to quarrels and unpleasant words during pregnancy

Sleep disturbance during pregnancy

Sukha and *Dukha*, *Pusti* and *karsya*, *Bala* and *Abala*, *Vrishata* and *Klibata* depend upon sleep. So proper sleep is needed for good health. If the biological clock does not work well without proper rest i.e. the hormone function will not properly work. Sleep problems and changes in sleep patterns start during the first trimester of pregnancy. Most likely influenced by the rapid changes in reproductive hormones levels. Levels of the progesterone rise throughout pregnancy. Insomnia can also negatively impact partner

relationship and interfere with mother infant bonding.66% of the respondents had experienced reduced sleep during their pregnancy

Habit of day sleep during pregnancy

According to *Acharya Susruta*, *Divasvapna* cause *Tridoakopan* but in *Acharya Vagbhata* says *Divasvapna* aggravates *Kaphadoṣa*. So, the day sleep is not beneficial for good health. If the mother having a habit of day sleeps for long time, the child may be over sleepy, ignorant and possess less digestive fire after delivery. These symptoms are seen which is also similarly noted in some classifications of ASD. 71% respondents had experienced day sleep during their pregnancy

The history of fasting, Skipping meals during pregnancy

Exposure to restricted or suboptimal diet during pregnancy affects fetal development and has lifelong health impacts on the offspring. Low birth weight and altered neonatal growth trajectories are associated with increased risk of obesity and impaired cognitive functions in the children.

CONCLUSION

Ayurveda classics beautifully elaborated the *Garbhapoorvaparicharya* and *Garbhiniparicharya*. These are detailed in terms of *AharaViharas*, the dos and don'ts, importance of good mental health during conception and pregnancy, the ill effects of those not following these regimen in the progeny were also described . Among the 100 mothers more than 70% were followed inappropriate food items during pregnancy. Above 65% of respondents were always followed inappropriate regimens during the period of pregnancy. By the Linear Regression one can predict the susceptible to develop Autism. So *AharaVihara* of mother during pregnancy has significant role in developing autism spectrum disorders. Proper education before conception especially regarding dos and don'ts regarding *AharaVihara* and taking preconceptional care is the need of the era to confirm the quality of sperm and ovum before conception to pursue a healthy and good progeny.

REFERENCES

- Gillott, A., Furniss, F., & Walter, A. (2001). Anxiety in high-functioning children with autism. *Autism*, 5(3), 277-286.
- Sharma, B. D., & Chouhan, K. (2016). Prevention & management of autism—an ayurvedic perspective. *J Res Trad Med*, 2(4), 117e21.
- Newschaffer, C. J., Falb, M. D., & Gurney, J. G. (2005). National autism prevalence trends from United States special education data. *Pediatrics*, 115(3), e277-e282.
- Shastri, K. A. (2002). *Susruta Samhita of Maharsi Susruta. Hindi Commentary, Chikitsasthan, Chaukhamba Sanskrita Sansthan, Varanasi, India, Edition-2012, Page, 120.*
- Shastri, K. A. (2002). *Susruta Samhita of Maharsi Susruta. Hindi Commentary, Chikitsasthan, Chaukhamba Sanskrita Sansthan, Varanasi, India, Edition-2012, Page, 98-99.*
- Samhita, C. (1949). *Charaka Samhita. Vols I-VI, Jamnagar, India: Shree Gulab Kunverba Ayurvedic Society.*
- American Psychiatric Association.(2000) *Diagnostic Criteria from DSM-IV-TR.*Washington.; DC 2: 28.Effectiveness of a Parental Education Programme on Ayurvedic Lifestyle in Autism Spectrum Disorders ,122
- Robinson, E. B., Koenen, K. C., McCormick, M. C., Munir, K., Hallett, V., Happé, F., ... & Ronald, A. (2012). A multivariate twin study of autistic traits in 12-year-olds: testing the fractionable autism triad hypothesis. *Behavior genetics*, 42, 245-255.
- King, M. D., Fountain, C., Dakhlallah, D., & Bearman, P. S. (2009). Estimated autism risk and older reproductive age. *American journal of public health*, 99(9), 1673-1679.
- Gallagher, C., McCarthy, F. P., Ryan, R. M., & Khashan, A. S. (2018). Maternal alcohol consumption during pregnancy and the risk of autism spectrum disorders in offspring: a retrospective analysis of the millennium cohort study. *Journal of autism and developmental disorders*, 48, 3773-3782.
- Acharya, Y. T., Samhita, S., Sthana, S., & Prakashana, C. S. (2009). *Varanasi. Chaukhambha Surabbharati Prakashan.*
- Sharma PV Prof, editor. 9th ed. 2. Vol. 2. Chaukhambha Orientalia; 2004 Agnivesha. *Charaka Samhita, Shrirasthana*; 412.
- Tiwari, P. (1999). *Ayurvediya Prasuti-tantra and Stri-Roga*, 1st Part. 2nd edition, Varanasi: Chaukhambha Orientalia.
- Sharma, P.V. and Dash, B. (2009). *Charaka samhita of Agnivesha. English translation*, 412
- Krishnamurthy, K. H., & Sharma, P. V. (2008). *Bhela samhita. Varanasi: Chaukhambha Visvabharati*, 448, 6/242.
- Agnivesha, C. D., & Acharya, Y. T. (2000). *Charak Samhita with Ayurveda Dipika commentary. Varanasi: Chaukhamba Surbharati Prakashan. Reprint, 254.*

CITATION OF THIS ARTICLE.

Nithya AK, Anoop AK, Arun Vaidya, Sandhya CV. A Survey Study to Assess the Role of *Ahara -Vihara* of Mother during Pregnancy in Children with Autism Spectrum Disorders. *Bull. Env. Pharmacol. Life Sci*, Vol 12[3] Feb 2023: 120-124.