

## EFFECTIVENESS OF BIODYNAMIC CRANIOSACRAL THERAPY ON EMERGING ADULTS WITH AUTISM

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### ABSTRACT

Biodynamic craniosacral therapy as a new alternative form of therapy has proved to improvise several developmental disabilities and acquired illnesses. However, it does not provide sufficient validity and clarity regarding the generalized benefit of the therapy. The present study aimed to assess the effectiveness of biodynamic craniosacral therapy as an adjunctive method for emerging adults with autism. With deficits in social-emotional reciprocity and ritualized patterns of behavior it becomes difficult for parents and therapists to cope with the daily challenging life ahead of them. An intervention technique was adopted for emerging adults from 17- 25years of age. The group was administered 30 therapeutic sessions on a regular interval of time. The study uses a pre-test, mid- evaluation and post-test design to understand the significant improvement on the overall characteristics and domains such as language, sociability, sensory/cognitive awareness and physical health. However, the results indicated that there was a significant difference obtained within the group in terms of their improvement from the pre-test to post test in the social skills, speech and cognitive awareness, with no significant improvement in physical behavior. From these findings, it is observed that biodynamic craniosacral therapy has contributed towards the improvement of the autism characteristics of the sample to a significant degree. The study tried to explain the possible reasons for the present findings and suggested what could be incorporated for the effectiveness of the self-healing body mechanism.

Key words: *autism, biodynamic craniosacral therapy, emerging adults*

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## Introduction

*“Craniosacral Therapy does not heal or cure anything. It helps the body to heal itself”*

-Martin.D.Weaver

## Autism Spectrum Disorders

Autism is a neurodevelopment disorder in the category of pervasive developmental disorders, and is characterized by severe and pervasive impairment in reciprocal socialization, qualitative impairment in communication, and repetitive or unusual behavior. The Diagnostic and Statistical Manual of Mental Disorders, 4th edition (DSM-IV) and the International Classification of Diseases, 10th edition (ICD-10), include Autistic disorder, Asperger’s syndrome, Pervasive Developmental Disorder Not Otherwise Specified (PDD-NOS), Rett’s syndrome, and childhood disintegrative disorder as pervasive developmental disorders (Levy, Mandell& Schultz, 2009).

It is estimated that Autism Spectrum disorder (ASD) affects one child in every 150 births; other researches on a similar note estimate 6% chances in every 10,000 births. A raising diagnosis of 10-17% each year depicts that it is the fastest growing developmental disability. Scholars and researchers are unable to testify a single known cause of ASD. Studies report that one of the causal factors can be attributed to biological & neurological disorders that have an impact on the functionality of the brain.

Leo Kanner in 1943 coined the term infantile autism in his paper “Autistic disturbances of Affective Contact” and provided a comprehensive description of the early childhood syndrome. His contribution, helped clarify and distinguish the most prevalent pervasive developmental disorder from childhood schizophrenia.

The prevalence and diagnosis of autistic disorder has greatly increased since 1960’s. The clinical presentation of the disorder is observed to be severe impairment in socialization, communication and behavior. Socialization involves impairment in deficits in social-emotional reciprocity, poor nonverbal communicative behaviors used for social interaction, poor understanding of developing and maintaining relationships and lacks ‘Theory of mind’. In the communication aspect deficits are observed in stereotyped or repetitive motor movements, ritualized patterns of

verbal or nonverbal behavior, demanding sameness and rigid routines, abnormal intensity of fixated interests which are highly restrictive, hyper- or hypo-reactivity to sensory input or remarkable interests in sensory aspects of the environment, difficulty putting meaningful words together, despite large vocabularies and with restricted, stereotyped, and repetitive patterns of behavior there is preoccupation with stereotyped or restricted interests or topics, adherence to routines, rigidity, and preservative behavior, stereotyped, repetitive motor mannerisms, and self-stimulatory behavior, preoccupation or fascination with parts of items and unusual visual exploration and displays anxiety when disrupted from daily routine (Levy, Mandell & Schultz, 2009).

Several large scale researches were conducted to understand the etiology and pathogenesis of autism and research findings support that biological and genetic vulnerability possess a potential reason for the occurrence of autistic disorder. Ravindran (2012) in his paper also suggests that the leading cause for ASD is genetic. The presence of grand mal seizures and mental retardation provides clear evidence of the biological basis (Sadock & Sadock, 2003).

The association of Fragile X syndrome and tuberous sclerosis to autistic disorder has proven to be 1% and 2% respectively. Studies also indicate involvement of chromosome 6 & 7, along with chromosome 16 & 17 to be a causal factor attributing to the development of autism.

Other factors such as immunological factors like damage to the extraembryonic tissue during gestation or immunological incompatibility from maternal antibodies that are directed to the fetus also contribute to the development of autism. Perinatal factors like maternal bleeding during first trimester and meconium in amniotic fluid are causal factors. Research also indicates neurogenesis and decrease in neuronal death results in brain enlargement which is mostly noticed in autistic disorder, other biochemical factors such as increased homovarinic acid in cerebrospinal fluid results in pathogenesis of autism (Sadock & Sadock, 2003).

### **Biodynamic Craniosacral Therapy**

Craniosacral Therapy (CST) is a non-traditional, hands-on form of treatment that originated from the field of osteopathic medicine. Today, it is practiced amongst healthcare professionals to treat a variety of conditions. Research indicates that CST has led to greater

improvement in health than any other available alternative form of treatment (Avallone& Belli, 1997).

Craniosacral therapy finds its roots from ancient times. Techniques like Rekhi, Ayurveda and Acupuncture were used in India centuries ago, to treat individuals with various conditions. According to Craniosacral Therapy Association of North America, cranial manipulation was developed in Egypt thousands of years ago and was practiced in Peru as well. Back in the 1900's Russian physiology and Italian anatomy also acknowledged the flow of living energy (Tobias, 2003).

CST as a therapeutic and diagnostic technique is primarily based on the premise of the biological model known as the Primary Respiratory mechanism or craniosacral mechanism. Review of Literature elucidates that the biological model explains the inherent mobility of the nervous system and fluctuation of Cerebrospinal Fluid (CSF) results in rhythmic pulsation, which in turn is translated through the dural membranes to the cranial bones. Evidence of CSF pulsation can be measured by Magnetic Resonance Imaging, encephalography, mylography and ICP monitor.

Craniosacral therapy is a method of gently easing away these blockages in the CSF, which circulates within the head up and down the spine in a continuous motion. The practitioner palpates the body with their hands, by listening to the rhythm of the craniosacral system. Rhythm irregularities and blockages contribute to neurological, motor and sensory problems.

The general goals of craniosacral treatment is to decrease articular restrictions and improve its mechanism. Decrease tension in regions of membranous restriction, to reduce venous congestion and improve circulation, neural entrapment from exit foramina at the skull base and enhance the rate and amplitude of cranial rhythmic impulse(Downey, 2004).

Craniosacral therapy also helps people with seemingly untreatable diseases and disorders including autism, spinal cord injuries, chronic pain syndrome, cerebral palsy and others (Avallone& Belli, 1997).By understanding Upledger's principle that the body has the ability to heal itself, Friedman (2003) observed 30 years of case studies conducted at University of Michigan and found the utility of craniosacral therapy in, which is as follows: autism, cerebral palsy, attention deficit disorder, Parkinson's disorder, spinal cord injury and brain trauma.

Other forms and techniques like diet programs, sensory integration therapy, neurodevelopment therapy, physical therapy, speech therapy, occupational therapy, detoxification programs and homeopathy are found to enhance the level of functioning of a child diagnosed with Autism spectrum disorder, when combined with Craniosacral therapy (Waneever, 2007).

### Hypotheses

- There will be significant improvement in the overall level of functioning of the emerging adult diagnosed with autism post biodynamic craniosacral therapy.
- There will be significant improvement in the speech skills of the emerging adult diagnosed with autism post biodynamic craniosacral therapy.
- There will be significant improvement in the social skills of the emerging adult diagnosed with autism post biodynamic craniosacral therapy.
- There will be significant improvement in the cognitive skills of the emerging adult diagnosed with autism post biodynamic craniosacral therapy.
- There will be significant improvement in the health/physical behavioral skills of the emerging adult diagnosed with autism post biodynamic craniosacral therapy.

### Method

In this paper, the independent variable in the study was Biodynamic Craniosacral Therapy and the dependent variable in the study was motor skills, communication skills, social skills and health/behavior of the emerging adult diagnosed with Autism Spectrum disorder. The population of the present study involves emerging adults diagnosed with autistic disorder. This population shows marked impairment in the areas of communication, reciprocal interaction along with repetitive and stereotyped behaviors, interest and activities.

**Sample Size and Description.** Seven emerging adults diagnosed with autistic disorder in the age group of 17-25 years will be assessed using the quasi-experimental design. The Autism Treatment Evaluation Scale (ATEC) was administered to each of the parent of the seven children.

**Sampling technique.** Purposive sampling technique, under non-probability sampling method was used in the study (Singh, 2008). The **inclusion criteria involves** emerging adults who meet the diagnostic criteria for autistic disorder and lie in the age range of 17-25 years, who have started the therapy at similar times and those who have not received biodynamic craniosacral therapy previously. Whereas, the **exclusion criteria involves** emerging adults who do not meet the accurate diagnosis of autistic disorder and those who have been receiving standard treatment for autism for more than a year.

### **Research design and data analysis**

Quantitative paradigm is employed for the study. A quasi-experimental design will be used. One-group Pretest-Posttest design was appropriate, as the effects of the treatment (Biodynamiccraniosacral therapy) are judged by making a comparison between pretest and posttest scores. There is no control group used in this design.

This type of design provides more information about two extraneous variables. The pretest scores indicate the initial state of the selected subjects and the posttest scores indicate the state of experimental mortality of the subjects (Singh, 2008). Friedman test was used to find out the within mean group difference and Wilcoxon Signed rank test was applied to find the difference within the group.

### **Method of Data Collection/ measures**

Data was gathered from the Parent using the Autism Treatment Evaluation Scale(Rimland&Edelson). The reliability of the scale is .942 and validity has been established based on published studies that have shown that ATEC is sensitive to changes brought about by treatment.

### **Ethical considerations**

The participants were provided with the informed consent form outlining the purpose and nature of the study and they were informed that they can withdraw from the study as per their wish. Any kind of physical/psychological harm was avoided. Confidentiality of identity and results was assured and mentioned that the data will strictly be used for research purpose. No

information has been published without the permission of the respondents and debriefing of the results to the participants shall be done in the near future.

**Results**

Table 1

*Descriptive statistics of performance of the group from pretest to post test in terms of overall autism characteristics*

Domain	N	Intervention Level	Mean	SD	Mean Rank	Chi-Square Value	Sig.
Overall characteristics	7	Pretest	65.29	18.883	3.00		
		Mid evaluation	52.43	15.426	1.71	11.143	.004*
		Posttest	41.14	11.157	1.29		

\*p <0.05

Hypothesis 1 of the present study stated that there will be significant improvement in the overall level of functioning of the emerging adult diagnosed with autism post biodynamic craniosacral therapy. The Friedman test was used to test this hypothesis.

As per the results displayed in table 1, it was indicated that there was a significant improvement from pretest to post test in the overall autism characteristics with  $\chi^2(2) = 11.143$  and  $p = .004$  which was significant at the 0.05 level. Therefore hypothesis 1 was accepted.

Since a significant progressive improvement was seen from pretest to post test in the study group, a post hoc test was done to find out the significant improvement within the three levels of the intervention.

**Discussion**

Recent studies in the area of biodynamic craniosacral therapy have emphasized on the non-invasive nature of the therapeutic process that adopts a holistic approach in dealing with various conditions and illnesses. As a new alternative form of therapy it has proved to improvise

several developmental disabilities and acquired illnesses and conditions. However, it does not provide sufficient validity and clarity regarding the generalized benefit of the therapy.

The current study proposes to explore the generalized benefits of biodynamic craniosacral therapy as an adjunct method for emerging adults with autism. With the already challenging life ahead of the patient and parent, it becomes difficult to adopt to an eclectic approach and participate in the different alternative forms of therapy available, which are more specific to a particular function. A few of which are sensory integration therapy, detoxification, diet programs, speech therapy, occupation therapy etc. when CST is combined with any of the mentioned therapies, tremendous benefits are observed. Nevertheless, CST as a unique proposition, contributes to a biological perspective in terms of its approach. The major tenet being, resolving the inner chaos through manipulating the flow of cerebrospinal fluid and easing the blockages, as a result of which a greater impact is witnessed in the patient undergoing therapy.

Hypothesis 1, stated that there will be a significant improvement in the overall level of functioning of the emerging adult diagnosed with autism, post biodynamic craniosacral therapy and the above hypothesis is accepted. This indicates that there is a significant difference in the overall autistic characteristics of the adult diagnosed with autism. The post hoc results also showed significant results from pre-test to post-test evaluation. To support this finding, we observe that Wanveer (2007) in his study presented the enhanced improvement witnessed by the patients through this procedure.

Hypothesis 2, stated that there will be significant improvement in the communication skills of the emerging adult diagnosed with autism post biodynamic craniosacral therapy and the hypothesis is accepted. This suggests that there is a significant difference in the domain of speech and communication skills post craniosacral within the group. The post hoc results also showed significant results from pre-test to post-test evaluation.

Hypothesis 3, stated that there will be significant improvement in the social skills of the emerging adult diagnosed with autism post biodynamic craniosacral therapy. The hypothesis proves to be accepted, which indicates that there is a significant difference in the domain of social skills in the group after the administration of biodynamic craniosacral therapy. The post



hoc results also showed significant results from pre-test to post-test evaluation. This suggested that there is a probability of increase in social reportire of the patient, with increased adjustment, display of affection towards family members and decreased temper tantrums.

Hypothesis 4, stated that there will be significant improvement in the cognitive skills of the emerging adult diagnosed with autism post biodynamiccraniosacral therapy. The results indicate that the hypothesis is accepted which signifies that there is a significant difference in the domain of sensory/cognitive awareness post biodynamic craniosarcal therapy. It is observed that there is a slight difference towards appropriate facial expression as well as understanding explanations provided, which proves to be a significant area in the life of an autistic adult. The post hoc results also showed significant results from pre-test to post-test evaluation.

Hypothesis 5, stated that there will be significant improvement in the physical/health/behavioral skills of the emerging adult diagnosed with autism post biodynamiccraniosacral therapy. In accordance to the results, the hypothesis is rejected, which indicates that there is no significant improvement between health/ physical behaviour of the adult diagnosed with autism after administration of biodynamic craniosacral therapy.

This can be attributed to several reasons. First of all, the limitation of the study lies in the fact that data collected from parents were not accountable to be extremely reliable due to their lack of understanding in the biomedical approach. Second, aspects such as seizures, sound sensitivity, sleep disturbances and constipation required more number of sessions as suggested by the craniosacral therapist as these aspects required more specificity in approach. The holds required to regulate the body mechanism in a more a toned manner in order to ease the autistic patient required more number of sessions as each field in the health domain differed greatly in its problem. It varied from eating patterns, sleep disturbance, social behaviour and obsessions and therefore only a miniscule difference and progress could be witnessed in the patient, though the results of health/ physical behavior, display that there is no significant difference in the patient post biodynamic craniosacral therapy.

### Summary and conclusion

Autism is no more unknown to families across the globe. This pervasive disorder has brought a significant change in the life of many. From the birth of the child we notice difference

in behaviors such as poor social connectedness, inability to maintain intimate relationships and to being a child who has created a world of his/her own. The very first form of identification is when your child does not maintain eye contact with you and as days go by your body language fails to be mimicked, language fails to develop and when in school there is low academic performance. Several intervention techniques began to be used to enhance the social, cognitive, speech and sensory awareness for the child diagnosed with Autism.

The present study aims to understand the effectiveness of biodynamic craniosacral therapy as an adjunct form of therapy to treat emerging adults with autism. It has been noted that a study conducted by Upledger shows loss of flexibility and probable inflammation of the membrane layers surrounding the brain in the children diagnosed with Autism which in turn has an impact on the limbic system, reticular activating system and hypothalamus which is sufficient to cause impairment in social interaction and imaginative thinking.

A quantitative paradigm using a quasi-experimental design was adopted to evaluate the level of autistic characteristics in the emerging adult diagnosed with autism. This intervention technique was applied to seven emerging adults within the age range of 17-25 years. All the seven adults belonged to the same institution of school for disabilities. Purposive type of sampling was used to truly represent a sample of the population, under the non-probability sampling method. The one-group pretest-posttest design was appropriate to assess the effectiveness of biodynamic craniosacral therapy over a duration of time. Mid-evaluation was assessed to indicate progress through the therapy. 30 sessions of biodynamic craniosacral therapy were administered to all the seven patients.

The Autism treatment evaluation checklist (ATEC) was presented to parents of the autistic adult during three periods in time. Firstly, before administration of therapy, then during the 15<sup>th</sup> session and then post therapy to assess effectiveness of biodynamic craniosacral therapy on emerging adults with autism. Socio-demographic details were collected pre-test, along with the informed consent from parents and the institution. Ethical considerations were kept in mind through the completion of the procedure.

The data was analysed using a non-parametric test. Friedman test was used to find out the within mean group difference and as a post-hoc test, Wilcoxon Signed Rank test was applied to

find the difference within the group. The domains focused upon in the study were speech skills, sociability, cognitive/sensory awareness and health/physical behaviour. However, significant progress was witnessed in speech skills, sociability and cognitive awareness with no significant difference in health/physical behaviour.

### Limitations

- Since biodynamic craniosacral therapy is an emerging field in India, there are only a few institutes that practice this therapeutic form. Thus purposive sampling was used with a small sample size which hence, prevents generalizability and reliability of results.
- Owing to time constraints only thirty sessions could be administered to the patients. Increased number of sessions may have attributed to increased improvement in the autistic characteristics.
- Parents lack of knowledge regarding the abilities and skills of their child which therefore influences their responses to the scale.
- The research design does not help control extraneous variables like history, maturation, testing and instrumentation.

### Suggestions for future research

Review of literature in the field suggests that early intervention through biodynamic craniosacral therapy is found to prove greater results as infancy and early childhood are critical periods of brain development and because during younger ages the brain has more plasticity to recover from injury than in later years.

As CST is still an emerging field, review of literature and studies are limited. Hence, there is lack of clarity in understanding the generalized benefits of biodynamic craniosacral therapy on autism. Scarcity of data from this field also indicates that further research is required.

It is also important to note that the improvement witnessed be maintained even after halt of the therapy being administered. Increased severity, is known to have greater resistance and which in turn calls for increased number of sessions.

Future research must also take into account a more individualized intervention plan in terms of the number of sessions required by the patients based on the level of severity of symptoms displayed.

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