



Neurodevelopmental Disorders in Children W.S.R To Unmada -A Review Article

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ABSTRACT

According to World Health Organization, mental health disorders are one of the leading cause of disability worldwide. Behavioral problems of children are becoming common and around 6 million children are affected by various behavioral problems and in India, it is 33.4%. Neurodevelopmental disorders (NDDs) are the behavioral and cognitive disorders that arises during the developmental period that involves significant difficulties in the acquisition and execution of specific intellectual, motor or social functions, which include developmental deficits that produce impairments of personal, social, academic or occupational functioning in children. Incidence of neurodevelopmental disorders according to CDC includes ADHD 9.8%, Anxiety 9.4%, Behavior problems 8.9%, Depression 4.4%. Affected children commonly experiences academic under achievement, problem with interpersonal relationships with family members, peers and low self-esteem, emotional, behavioral and learning disorder. The treatment includes psychosocial treatment, behavioral management, medication includes psychostimulant drugs, antidepressant drugs, antipsychotic drugs which are not much effective and has various side effects. Ayurvedic approach include internal medication and through panchakarma procedures shows a good result and proved to be effective in treating NDDs in children. In Ayurveda treatment principles of behavioral disorders not based on the symptom modified and more over based on the elimination of root cause of the disease by using employing appropriate purificatory methods accordance with doshik involvement, which increases the concentration, attention and quality of life in children. An attempt is made to highlighting on details of unmada by correlating with NDDs.

Keywords: NDDs, ASD, ADHD, Mania , Depression, Unmada, vataja, pittaja, kaphaja, chikista in children.

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INTRODUCTION

According to World Health Organization, mental health disorders are one of the leading causes of disability worldwide. Behavioural problems of children are becoming common and around 6 million children are affected by various behavioural problems and in India, it is 33.4%. (1) A neurodevelopmental function is a basic process needed for learning and productivity, neurodevelopmental dysfunction reflects disruption of neuroanatomic structure or psychophysiological function and place a child at risk for developmental, emotional, cognitive, behavioural, psychosocial and adaptive challenges. (2) According to WHO neurodevelopmental disorders (NDDs) is defined as behavioural and cognitive disorders that arises during the developmental period that involves significant difficulties in the acquisition and execution of specific intellectual, motor or social functions (3). Neurodevelopmental disorders are defined by the American psychiatric association diagnostic and statistical manual of mental disorders criteria, which include developmental deficits that produce impairments of personal, social, academic or occupational functioning (4). Incidence of neurodevelopmental disorders according to CDC includes ADHD 9.8%, Anxiety 9.4%, Behaviour problems 8.9%, Depression 4.4% (5). In DSM-5, NDDs were established as a new disease category (6). Major neurodevelopmental disorders include autism spectrum disorder (ASD), Attention deficit hyperactive disorder (ADHD), Psychotic/irritable mania, Childhood schizophrenia, anxiety disorder, Major depression disorder etc. The treatment includes psychosocial treatment, behavioural management, medication includes psychostimulant drugs, antidepressant drugs which are not much effective and has various side effects such as headache, nausea, anorexia, abdominal pain, seizure, sedation and depression etc. (7). In Ayurveda all psychiatric and NDDs are explained under the heading of *unmada*. The clinical features of the different types of *unmada* resemble various types of behavioral disorders like ASD, ADHD, Childhood schizophrenia, Psychotic/irritable mania, Anxiety disorder, Major depression

disorder etc (8). According to *acharya charaka unmada* is *manasa vyadhi* in which understood as the unsettled condition of *mana*(mind), *bhakthi* (inclination), *sheela*(character) *chesta* (behavior) and *achara* (conduct) (9). According to *acharya sushruta unmada* is defined as vitiated bodily doshas when moves or traversing upwards through the channels get localized in the mind and causes its abnormality, this disease known as *unmada* is mainly a disorder of mind (10). In Ayurveda, it is considered a major mental illness. *Unmada* does not describe alone clinical entity compared to a modern diagnostic category, rather it is a group of psychotic disorders. As the psychotic disorders cover almost all the major mental illnesses, the different types and subtypes of *unmada* can be separately correlated with different psychotic disorders. (11) Affected children commonly experiences academic under achievement, problem with interpersonal relationships with family members, peers and low self-esteem, emotional, behavioral, language and learning disorder appears to continue with varying manifestations into adulthood and leads to significant unemployment, social dysfunction and an increased risk of antisocial behavior including substance abuse, difficulties in maintaining relationships and encounters with the law (12). In present era there is a increase in the prevalence rate of NDDs in children in which the contemporary medicine system is not sufficient for management of this ailment and have many side effects over a child. Ayurvedic approach include internal medication and through panchakarma procedures shows a good result and proved to be effective in treating NDDs in children, so there is a need of finding safe and effective treatment in ayurveda hence an attempt is made to correlate with various NDDs in ayurveda and their management in ayurveda.

MATERIAL AND METHODS

Review of literature is done from Ayurvedic classics and text books, modern text books and relevant literature is included from published articles, peer reviewed journals after thorough review of articles.

Attention deficit hyperactivity disorder (ADHD):

ADHD is most common NDDs in childhood characterized by inattention including distractibility and difficulty in sustaining attention, poor impulse control, decreased self- inhibitory capacity, motor overactivity and motor restlessness (13) Its prevalence across the globe 9.8 % from 2016-2019, it includes 3-5 years 2%,6-11 years 10%,12-17 years 13% of children (14) and its incidence is common in males than females. The clinical features mentioned in *vataja unmada* of Ayurvedic literature are more or less similar to that of ADHD and childhood schizophrenia.

VATAJA UNMADA:

Vata gets aggravated by the intake of ruksh ahara, alpa ahara and atisheetala ahara, dhatu kshaya,vamana virechana atiyoga, nirantara upavasa. This aggravated *vata* affects the *Hridaya* (site of mind),which is already afflicted with anxiety etc. And thus, quickly deranges intellect and memory. Laughing, smiling, dancing, singing, speaking, abnormal movement of body parts, weeping at improper places and improper time, roughness, emaciation, reddish discoloration of body parts and aggravation of the disease after digestion of food are the clinical features of the *vataja* dominant *unmada*(15,16). Table 1: Similarity between *vataja unmada* and ADHD (17)

Table 1: Similarity between *vataja unmada* and ADHD

VATAJA UNMADA	ADHD
<i>Parisaranam</i> or <i>paryatanam ajasram</i> (roaming purposelessly) <i>Angavikshepana</i> (abnormal involuntary movements)	Often turns about or climbs excessively in situation in which it is inappropriate. Often leaves seat in classroom or in another situation in which remaining seated is expected
<i>Bahu bhashita</i> (excessive talking)	Often talks excessively
<i>Asphotayati</i> – clapping his hands <i>Sphuritanga sandhi</i> - Throbbing of the joints.	Often fidgets with hands or feet on seat
<i>Atateeti</i> (wandering)	Often on the go or often acts as if driven by a motor

Vataja unmada can be compared with childhood schizophrenia, The schizophrenia spectrum are primarily characterized by the active or positive symptoms of psychosis, specifically delusion, hallucination, disorganized speech or grossly disorganized behavior. Individuals with schizophrenia can display inappropriate affects, dysphoric moods, disturbed sleep pattern, and lack of interest in eating or food refusal. And Cognitive deficits are observed (18). Childhood onset schizophrenia (COS)is a rare, chronic mental illness that is diagnosed in

children prior to the age of 13 years. COS has an estimated prevalence rate of approximately 1/10,000 and tends to occur more often in males than females (19).

Psychotic/irritable mania:

Mania is characterized by a distinct period of at least 1 week in which there is an unusually happy, unusually enthusiastic or unusually irritable mood. There also associated cognitive and behavioural symptoms, including unrealistically high self-esteem, needing little sleep, feeling that thoughts are racing, having difficulty concentrating, feeling agitated etc (20). Table 2 Similarity between *pittaja unmada* and psychotic/irritable mania (21)

Table 2: Similarity between *pittaja unmada* and psychotic/irritable mania

<i>Pittaja unmada</i>	Psychotic/irritable mania
<i>Amarsha</i>	Irritability.
<i>Samrambha/abhidravana/atidravana</i>	Restlessness/impulsivity/psychomotor agitation
<i>Krodha/taikshnya/abhihanana/santarjana/Rosha</i>	Anger or violence/threatening behaviour
<i>Geetaani bhajate nityam</i>	Positive or elated mood/expansiveness of mood/creativity or musical abilities found
<i>Vinagna bhava</i>	Nudity
<i>Anidra</i>	Decreased need for sleep
<i>Pashyati taarakaa diva</i> <i>Vahni shankee</i>	Visual hallucinations
<i>sheetabhilasha/jalaantara vihara sevi</i>	Disturbed fluid electrolyte imbalance / systemic inflammatory reaction etc

Pittaja unmada by their clinical features it can also be correlated to temper tantrum, anxiety disorder. Temper tantrum are often defined as out of control behaviour including screaming, hitting, head banging and falling down and other violent display of frustration, usually occurring in children of 18 months to 4 years of age. Tantrums gradually decrease by 4-5 years, after which they are uncommon and need intervention (22). Anxiety disorder include Symptoms of cognitive, such as nervousness, fearfulness, self-defeating thoughts or difficulty concentrating or behavioural which include excessive shyness, avoidance, reluctance or restlessness. (23)

PITTAJA UNMADA:

The *pitta* gets aggravated due to indigestion, by the intake of pungent, sour food, those articles causing burning sensation and hot in potency. it takes shelter in Hridaya (site of mind) in the person without self-restraint and thus suddenly gives rise to severe episode of *unmada* as per the above-mentioned pathogenesis. Intolerance, anger and excitement at inappropriate occasions, inflicting injury on self or on others by weapons, brickbats, whips, sticks and fist, running around, desire for shade, cold water and food having cooling effects, agitation, nakedness, terrorizing, excessive movements, yellowish lustre are the clinical feature of *pitta* dominant *unmada*. (24,25)

Major Depression disorder:

Major depression disorder is characterized by a distinct period of at least 2 weeks in which there is a depressed or irritable mood that present for most of the day nearly every day, and or loss interest or pleasure in nearly all activities. there also associated vegetative and cognitive symptoms, including disturbances in appetite, sleep and energy, impaired concentration and thoughts of worthlessness, guilt and suicide. Irritability and social withdrawal may be more common in children (26). The clinical features of *kaphaja unmada* more or less similar to that of depression disorder (27). Table 3: Similarity between *kaphaja unmada* and major depression disorder

Table 3: Similarity between *kaphaja unmada* and major depression disorder:

<i>Kaphaja unmada</i>	Feature of depression
<i>Manda vak cheshtitam</i>	Psychomotor retardation
<i>Aruchi</i>	Anorexia
<i>Agnisada</i>	suppression of appetite
<i>Sadana</i>	fatigue, Generalized body ache.
<i>Alpamati</i>	less intelligence/Decreased cognitive function / higher mental function /difficulty in thinking
<i>Bhibhatsatva / shaucha dvesha</i>	Ignoring personal hygiene, hating cleanliness
<i>Sthanamekadeshe</i>	inactive/dull/prefers solitude
<i>Alpa kanthanam/manda vaak / tooshi bhava</i>	social withdrawal,

KAPHAJA UNMADA:

If person taking excessive food and doing slow activities (having sedentary habits), kapha along with pitta (heat) increases in their vital organ (*Hridaya*), impairing intellect and memory and thereby deranging their mind produced in sanity. Slow speech and movements, anorexia and liking for women and loneliness, excessive sleep, vomiting, salivation, aggravation of the disease after taking meals and whiteness of nails, prefers not to speak, disinclination for food, aversion for cleanliness, always drowsy etc these are the clinical feature of kapha dominant *unmada* (28,29). The clinical features mentioned in *kaphaja unmada* of Ayurvedic literature are more or less similar to that of depressive disorder or depression /major depressive disorder.

Autism spectrum disorder (ASD):

ASD is a NDDs characterized by persistent deficits in social communication and interaction and presence of repetitive, restricted pattern of behaviours, interests and activities (30). About 1 in 36 children has been identified with autism spectrum disorder (ASD) according to estimates from CDC'(23). *Sannipataja unmada* can be compared with ASD by their clinical features. Table 4: Similarity between *sannipataja unmada* and ASD [29].

Table 4: Similarity between *sannipataja unmada* and ASD

Vataja unmada	ASD
Excessive movements, abnormal crying, laughing	Repeated movements of eyes brow, lip, chin, hands-feet, frothing of saliva, Excessive screaming.
Pittaja unmada	ASD
Impatient, irritable, aggressive demanding food and water	Aggression behaviour, irritable, recurrent fever, harsh pitch stemming.
Kaphaja unmada	ASD
Limited talk and movements, sleepy, drooling of saliva.	Stay in one place or spot, Less talkative, clumsiness, less mobility. Drooling of saliva, running nose, dislike for bathing and toileting.
Sannipataja unmada	ASD
Mixed features	Mixed features

Sannipataja unmada:

The severe type of *unmada* arising from *sannipataja* is caused by all the above etiological factors of three doshas, it presents with all the above characters (aggravation of all three doshas) in mixed form and because of antagonistic therapeutic principals, it is difficult to treat and therefore should be rejected or it should be treated based on predominance of dosha (31).

Treatment:

The treatment for NDDs includes psychosocial and behaviorally oriented treatments and the most widely used medications are the psychostimulant drugs(34), antidepressant drugs(30), antipsychotic drugs(32), are used in treatment of NDDs in contemporary science but they are not yielding satisfactory results and more over they are leaving significant side effects and some of them are further depressing the central nervous system, Hence most of the parents are approaching other alternative system of medicines for betterment of their children behaviors, among the various alternative system of medicines, Ayurveda is first preferred as per the statistics. In Ayurveda treatment principles of behavioral disorders not based on the symptom modified and more over based on the elimination of root cause of the disease by using employing appropriatory purificatory methods accordance with *doshik* involvement.

Ayurvedic management of *unmada* includes *snehana*, *vamana*, *virechana*, *basti*, *nasya*, *Anjana*, *abhyanga*, *shiropichu*, *shirodhra*, *takradhara* etc.(33)

IN VATAJA UNMADA:

Snehapana should be given initially, but if there is any obstruction in channels *snehayukta mrudu shodana* should be given(38).

IN PITTJA UNMADA:

Senhana, *swedana* and *virechana* are followed with *samsarjana karma* (34).

IN KAPHAJA UNMADA:

Senhana, *swedana* and *vamana* are followed with *samsarjana karma*(35).

USAGE OF GHRITA IN UNMADA:

Ghrita as an individual drug and in combination is supposed to have desired effect in many of the diseases especially of psychiatric origin. It helps in stopping the disease of *Unmada* at the level of pathology, pathogenesis and manifestation. The property of ghee in enhancing cognitive abilities and balancing chemical changes in brain is appreciable (36). Most commonly used ghrita in *unmada kalyanaka ghrita* (37), *brahmi ghrita* (38), *maha paishechika ghrita* (39).

DISCUSSION

NDDs are those ailments which effects the developmental of brain and develops the condition like ASD, ADHD, Depression disorders, childhood schizophrenia, anxiety disorder, Psychotic/irritable mania etc. Treatment includes psychosocial treatment, behavioral management, medication includes psychostimulant drugs, antidepressant drugs which are not much effective and has various side effects such as headache, anorexia, abdominal pain, seizures, sedation and depression, and cardiovascular effects. In Ayurveda the neurodevelopmental disorders can be correlates with the umbrella term *unmada*. In present Era there is a increase in prevalence rate of neurodevelopmental disorders among children in which contemporary medicine is not sufficient for management of this ailment and has many side effects on children. Hence there is need to treat children with more efficacy and less side effects. Ayurvedic medications along with panchakarma procedure proved to be effective in children. In *vata* dominant type, first off, all one should prescribe intake of oils and ghritas (*Sneha*) substance but if there is obstruction in channels, mild purgatives should be administered. If the *unmada* is caused by *pitta* and *kapha*, *vamana* and *virechana* should be given. Thereafter *anuvasana basti*, *niruha basti* and *shiro virechana* should be given. Depending upon the predominance of *doshas*, one or the other of the above measures should be repeatedly applied. By the administration of these therapeutic measures, heart, sense organs, head and bowels (*koshtha*) get cleansed as a result of which the mind gets refreshed and the patient regains memory as well as consciousness (40). Ayurvedic medications along with *Panchkarma* procedures can be a very life changing treatment for the children, which not only increases the concentration and attention of children but also increases the quality of life. Main Aim of Ayurveda is to balance the vitiated *Doshas* in body and to clear the ailments which are present in *srotas* also the vitiation of *Dhee*, *Dhriti* and *Smriti* can be corrected through the Ayurvedic Approach.

CONCLUSION

In NDDs the contemporary medications are not sufficient in treating the children and which shows more side-effects on the children, hence there is a need to treat the children with more efficacy and less side effects. Ayurvedic treatment like panchakarma along with internal medications and *satvavajaya chikitsa* (psychotherapy) shows good results in children, In Ayurveda treatment principles of behavioral disorders not based on the symptom modified and more over based on the elimination of root cause of the disease by using employing appropriator purificatory methods accordance with *doshik* involvement, which increases the concentration and attention and it also increases the quality of life in children.

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