

Mental Health in Growing Children and Adolescents: A Review of Stress Physiology and Ayurvedic Perspectives.

Abstract:

Mental health issues among growing children and Adolescents are increasing due to rapid physical– emotional development, academic pressure, family stress, and excessive digital exposure. Emotional disorders are common among adolescents. According to WHO estimates, 4.1% of 10-14 year olds & 5.3% of 15-19 years of experience an anxiety disorder, depression is estimated to occur among 1.3% of 10-14 years & 3.4% of 15-19 years. From an Ayurvedic perspective, mental disturbances arise from Manasika dosha imbalance, Prajapradha, improper Ahara–Vihara, and depletion or vitiation of Majja and Rasa Dhatu. Early signs, such as mood instability, reduced concentration, disturbed sleep, and academic decline, often go unnoticed.

Aim: This paper review aims to examine common childhood mental health problems-anxiety, depression, irritability, attention difficulties, and behavioral disturbances through both modern evidence and Ayurvedic concepts.

Materials & Methods

This review used classical Ayurvedic literature, research articles, and modern medical literature concerning childhood and adolescent mental health, stress physiology, and Ayurvedic approaches to mental well-being.

Results

The literature review indicates that childhood mental health disturbances are associated with Rajas– Tamas, Prajnapradha, improper Ahara–Vihara, and the involvement of Manas and Manovaha Srotas. Chittodvega, Vishada, Bhaya, Smritibhramsha, and Medhabhramsha have been described in relation to anxiety, depressive features, fear, memory, and learning difficulties. Ayurvedic management emphasizes Nidanaparivarjana, Sattvika Ahara, Dinacharya, Rasayana, Medhya Rasayana, and Satvavajaya Chikitsa.

Discussion

Interventions including Sattvika Ahara, Dinacharya, balanced screen habits, Medhya Rasayana (Shankhpushpi, Brahmi, and Mandukaparni), yoga, pranayama, and parental counselling show significant preventive and therapeutic potential. Integrating Ayurvedic lifestyle principles and

approaches can promote emotional resilience, cognitive development, and holistic well-being in children.

Keywords

Prajnaparadha; Manasika Roga; mental health; Medhya Rasayana; Satvavajaya Chikitsa; childhood and adolescence.

Introduction :

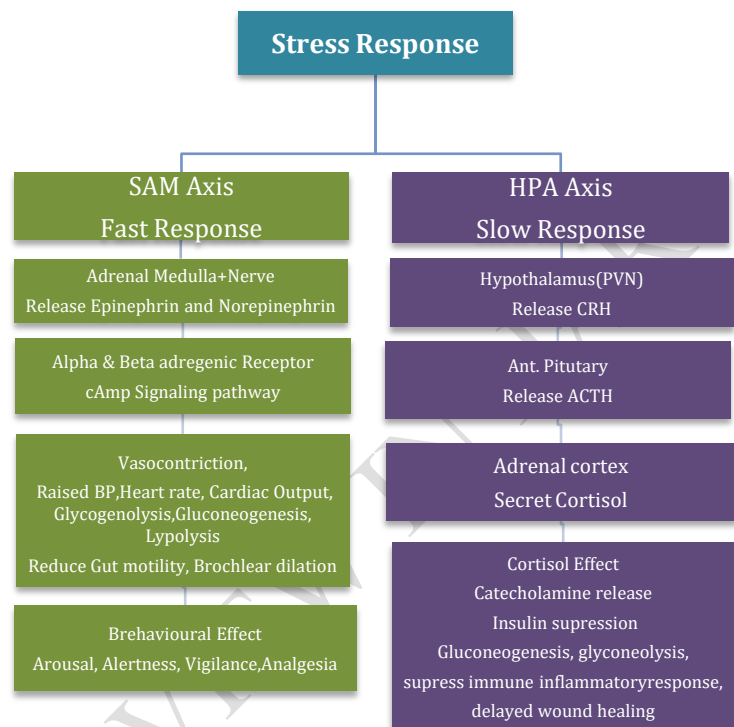
Childhood and adolescence are formative stages which substantial physical, emotional, cognitive, and social changes occur[1,2]. The quality of the family, educational, and social environment during these years has an important influence on psychological well-being. Adolescents may become particularly vulnerable to mental health problems when developmental changes occur in conjunction with poverty, abuse, violence, academic pressure, social expectations, or other adverse circumstances. Globally, it is estimated that one in seven (14.3%) of 10–19-year-olds experience mental health conditions yet these remain largely unrecognized and untreated[1,3]. According to WHO data, it is estimated that 4.1% of 10-14 years old & 5.3% of 15-19 years experience an anxiety disorder, depression is estimated to occur among 1.3% of 10-14 years & 3.4% of 15-19 years[1].

The burden of psychological difficulties among school-going children warrants particular attention. Children may not seek help because they have difficulty communicating their concerns, lack confidence in adults, or fear negative reactions, stigma or victimization. In the Indian context, academic competition, performance expectations and social pressures may further contribute to psychological stress[5,6]. Consequently, mental health promotion should include healthy sleep, regular physical activity, development of coping and problem-solving skills, interpersonal competencies, and effective emotional regulation[4,7]. Supportive relationships within the family, school and community constitute important protective factors.

Stress can be conceptualized as a state in which actual or perceived challenges disturb physiological homeostasis. The body responds through coordinated neural, endocrine, and behavioral mechanisms. The acute response is adaptive because it prepares the individual to respond to an immediate challenge; however, prolonged or excessive activation can become maladaptive and may contribute to adverse health outcomes[8].

Stressors may be physical, psychological, emotional, or a combination of these. Physical stressors include disturbances in the internal environment and environmental extremes, whereas

psychological stressors may involve fear, anxiety, frustration, interpersonal difficulties or perceived threats. Such stimuli can activate the hypothalamic–pituitary–adrenal (HPA) axis and the sympathetic nervous system. Persistent activation of the stress response may influence growth-related processes, thyroid function, pubertal and reproductive development and metabolic regulation. Early adverse experiences have also been associated with longer-term effects on physical and psychological well-being[8,10].



Physiology of Stress The physiological stress response involves a rapid SAM-mediated component and a comparatively slower HPA-mediated component. Activation of the SAM system increases the release of epinephrine and norepinephrine from the adrenal medulla and sympathetic nerve terminals. These catecholamines act through adrenergic receptors and produce a range of physiological responses, including increased heart rate, cardiac output, blood pressure, skeletal-muscle perfusion, glucose availability, lipolysis, oxygen consumption and thermogenesis. Gastrointestinal motility may decrease, while alertness, vigilance, arousal and focused attention may increase.

The slower component is mediated through the HPA axis. Stress-related activation of the hypothalamus promotes secretion of corticotropin-releasing hormone (CRH), which stimulates the anterior pituitary to release adrenocorticotrophic hormone (ACTH). ACTH subsequently stimulates the adrenal cortex to release glucocorticoids, principally cortisol. Cortisol contributes to energy mobilization through processes such as gluconeogenesis, glycogenolysis, modulates inflammatory and immune activity. Stress regulation also involves several interconnected brain regions. The amygdala is particularly involved in emotional processing and fear responses. The hippocampus

contributes to memory and negative feedback regulation of the stress response, whereas the prefrontal cortex participates in executive functions and top-down regulation of emotional responses. Dysregulation within these networks has been implicated in stress-related psychological disorders[8,13].

Pathophysiology of Chronic Stress : The **General Adaptation Syndrome** provides a conceptual model for understanding physiological responses to persistent stress and describes three stages: **Alarm, Resistance and Exhaustion**[9].

The **alarm** stage represents the initial response to an acute stressor and is characterized by activation of the fight-or-flight response. If the stressor is resolved, physiological parameters gradually return toward baseline. When the stressor persists, the organism enters the **resistance** stage, during which adaptive mechanisms remain activated to maintain functioning under continued stress. Persistent activation may be associated with manifestations such as poor concentration, irritability, and frustration. With prolonged exposure and inadequate recovery, the response may progress to an **exhaustion** stage. At this stage, persistent physiological demand may be accompanied by fatigue, reduced stress tolerance, anxiety, depressive symptoms and diminished adaptive capacity. Prolonged stress-hormone exposure may also suppress aspects of immune function[12,13]. Thus, the transition from an adaptive acute response to chronic dysregulation provides a physiological basis for understanding the potential relationship between sustained stress and adverse health outcomes[10].

Ayurvedic Perspective : From the Ayurvedic perspective, mental health is considered an inseparable component of overall health. Ayurveda defines health in terms of equilibrium among Dosha, Dhatu, Mala and Agni, together with a balanced state of Atma, Indriya and Manas[16]. Within this framework, psychological disturbances can be examined in relation to the Manasika Dosha—Rajas and Tamas—along with Prajnaparadha, inappropriate Ahara-Vihara and disturbances of relevant Dhatu. Early recognition of changes in mood, concentration, sleep and academic functioning is therefore important for preventive care.

In Ayurvedic thought, disturbances of mental functioning may be associated with predominance or aggravation of Rajas and Tamas, Prajnaparadha, inappropriate Ahara-Vihara. Clinical manifestations may include emotional instability, impaired concentration, sleep disturbance and deterioration in scholastic performance.

Manas: The term Manas is derived from the root associated with thinking and cognition. In Ayurvedic literature, Manas is described as a faculty involved in contemplation, comprehension, perception and coordination of mental functions. Charaka describes Manas as a cognitive faculty involved in mental processing and related terms include Chitta, Chetas, Chetana, Hridaya, Hritand Sattva.

Manas is influenced by Sattva, Rajas and Tamas. Sattva represents clarity and the capacity for knowledge, discrimination, self-regulation and appropriate expression. Rajas represents activity and may be expressed through excessive emotional or behavioral activation. Tamas represents inertia and inhibition and may manifest as dullness, inactivity, or excessive sleep. In pathological states, predominance or disturbance of Rajas and Tamas is associated with Manasika Vikara[14,15].

Manovaha Srotas : Mind is intricately linked with sensory and motor organs, collectively known as “Indriya”. It plays a crucial role in coordinating various functions in conjunction with the soul (Atma) and intellect (buddhi). These components are part of “Manovaha Srotasa”. Disturbance of mental functioning is considered under the broader category of Manasika Vikara. Disturbances of the three Sharirika Dosha lead to different patterns of psychological and somatic manifestations[16].

Vatadisturbance is associated with anxiety, agitation, insomnia, irritability and other functional complaints. Pitta disturbance is described in association with anger, irritability, restlessness and metabolic or inflammatory manifestations. Kapha disturbance is associated with lethargy, excessive sleep, reduced alertness and depressive features. These associations should be interpreted within the Ayurvedic conceptual framework rather than as direct diagnostic equivalents to modern psychiatric disorders.

Methods

This article is based on combining classical Ayurvedic texts and modern scientific literature.

Literature Search Strategy: The primary search of classical texts including Charaka Samhita, Sushruta Samhita, Ashtanga Hridaya and Kashyap Samhita with their commentaries relevant references related to Manasika Vyadhi, Balyavastha, Satvavajaya Chikitsa, Medhya Rasayana. Secondary search of Modern literature related to child mental health.

Etiological Factors : Ayurvedic descriptions of the causes of mental disorders include

a) improper interaction of Kala, Buddhi, and Indriyarthas; Prajnaparadha.

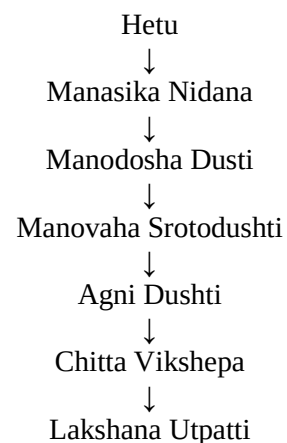
- 152 b) failure to follow Sadvritta.
- 153 c) suppression of natural urges.
- 154 d) predominance of Rajas and Tamas or reduced Sattva.
- 155 e) impairment of Buddhi, Dhriti and Smriti.

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157 **Samprapti** : Predisposing factors such as low Sattva, inappropriate
 158 Ahara–Vihara, mental stress and predominance of Rajas and Tamas
 159 may contribute to disturbance of Sharirika Dosha and Manasika
 160 Dosha. The process is described as involving the Manovaha Srotas
 161 and subsequent functional disturbance of mental processes.

162 The proposed sequence may be summarized as follows:

163



164 **Disease Primarily Due to the Involvement of Rajas and Tamas:** The ayurveda text also identifies
 165 emotional states such as Kama, Krodha, Lobha, Moha, Irshya, Mana, Shoka, Udvega, Bhaya and
 166 Harsa among the mental disturbances associated with Rajas and Tamas[24,25,26]. The Ayurvedic
 167 correlations actually described Chittodvega, Vishada, Bhaya, Unmada, Smritibhramsha and
 168 Medhabhramsha[16].

- 169 • Chittodvega – anxiety and mental agitation
- 170 • Vishada – depressive features
- 171 • Bhaya – fear-related mental disturbance
- 172 • Unmada – behavioural/mental disturbance described in Ayurvedic literature
- 173 • Smritibhramsha – impairment of memory
- 174 • Medhabhramsha – learning or cognitive difficulty

175 **Psychoneuroimmunological Perspective** : Manasika Roga is described in relation to imbalance of
 176 Sharirika Dosha—Vata, Pitta and Kapha—and Manasika Dosha—Rajas and Tamas. The concept of
 177 Ojas is presented as representing vitality and resilience, with Ojokshaya being discussed as a
 178 conceptual correlate of reduced resilience under chronic stress[27].

From a modern psychoneuroimmunological perspective, persistent psychological stress can influence neural, endocrine and immune pathways[11,12]. The ayurveda text proposes that an Ayurvedic interpretation involving Dosha, Ojasand mental functioning may provide a complementary conceptual framework for understanding manifestations such as anxiety, depressive symptoms and cognitive dysfunction[13,16]. These proposed correspondences should be regarded as interpretive links rather than established one-to-one biomedical equivalences.

Ayurvedic Management

Ayurvedic management of mental health concerns is presented as an individualized and multidimensional process. Yuktivyapashraya Chikitsa is described as treatment planned according to the Dosha–Dushya interaction and includes Shamana, Shodhana and Nidanaparivarjana, together with rational application of Ahara, Vihara and Aushadha. The term Yukti denotes rational therapeutic planning.

Nidanaparivarjana is regarded as a fundamental therapeutic principle. In the context of mental well-being, this includes

- Sadvritta palan
- Dharniya Vega Dharan
- Improper use of Kala, Buddhi and Indriyarth
- Samyak Prayog of Ashta Vidha Ahara Visheshayatana, Dwadash Ashana Vihar

Yuktivyapashraya is further described in terms of

- Antah Parimarjana -Shodhana and Shamana
- Bahi Parimarjana Chikitsa. - Abhyanga, Swedana, Shirodhara, Avagaha, Utsadana, Dhupana and Anulepana[22,23].

Shodhana procedures including Vasti, Shiroyasti, Vamana, Virechana, Nasyaand Shirodhara. These procedures are traditionally considered according to the individual's Dosha, clinical statusand therapeutic indication[18]. In pediatric populations, any invasive or pharmacological Ayurvedic intervention requires age-appropriate clinical assessment and qualified supervision. Shirodhara in particular has clinical evidence for improving sleep quality and reducing anxiety and stress-related insomnia [22,23].

207 **Rasayana Chikitsa** is described to support healthy functioning, longevity, strength and intellectual
208 capacity. The Ayurveda text emphasizes that Rasayana is not restricted to pharmacological
209 preparations; it encompasses medicinal substances, dietary practices and appropriate conduct.

- 210 • Acara Rasayana includes regulation of sensory activities, self-control, non-violence and
211 maintenance of a disciplined, relatively stress-free routine.
- 212 • Ajasrika Rasayana emphasizes regular intake of nutritious and balanced food. Dietary selection
213 is described in relation to the six Rasa and individualized according to Desa, Kala, age,
214 Prakriti and disease status.
- 215 • Ausadha Rasayana refers to the medicinal component and is presented as complementary to
216 appropriate conduct and diet [20,21].

217 The Ayurveda identifies Medhya plants such as Brahmi, Mandukaparni, Shankhpushpi, Jatamansi
218 and Vachaas traditionally associated with cognitive functions. Their use in children should,
219 however, be individualized and medically supervised, particularly because evidence, formulation,
220 dose, quality and safety may vary across preparations.

221 **Daivavyapashraya Chikitsa** represents a traditional category of Ayurvedic management associated
222 with spiritual or ritual practices. The source Ayurveda text describes it in relation to beliefs
223 concerning divine influences and purvjanam Karma and lists practices such as Swastivachana,
224 Mangala and Homa among its components[18].

225 **Satvavajaya Chikitsa** is described as an approach directed toward regulation and strengthening of
226 the mind by reducing engagement with unhealthy or distressing objects and patterns. Charaka's
227 framework emphasizes Jnana, Vijnana, Dhairya, Smriti and Samadhi as important means of
228 strengthening mental control and adaptive functioning[17].

229 The Ayurveda relates Satvavajaya to management of emotional and behavioral disturbances by
230 addressing states such as excessive desire, grief, fear, anger, jealousy and delusion. In contemporary
231 terms, some components can be conceptually related to counselling, reassurance, behavioral
232 modification, emotional regulation, cognitive strategies and strengthening of adaptive coping. Such
233 parallels are conceptual and should not be interpreted as evidence that Satvavajaya is identical to
234 any single modern psychotherapeutic modality[17,18].

235 **Results**

The review identifies childhood as a predominantly Kapha-associated developmental stage within the Ayurvedic framework, with implications for growth, stability and immunity. Mental health is described as being supported by predominance of Sattva, whereas excessive Rajas and Tamas are associated with psychological disturbance[14,15].The Ayurveda science identifies inappropriate dietary and lifestyle practices, including irregular meals, nutritionally poor food choices, inadequate sleep, insufficient physical activity, Prajnaparadha, emotional stress and excessive sensory stimulation as factors that may disturb Agni and Dosha balance and contribute to Manovaha Srotas Dushti.The psychological manifestations discussed in Ayurvedic terminology include Chittodvega in relation to anxiety, Vishada in relation to depressive states, Bhaya in relation to fear, Unmada in relation to behavioral or severe mental disturbances, Smritibhramsha in relation to impaired memory and Medhabhramsha in relation to learning difficulties [16].

Overall, the Ayurvedic management strategy described in the review emphasizes restoration of Dosha equilibrium, promotion of Sattva and support of cognitive and emotional functioning through appropriate Ahara, Vihara, Aushadha, Satvavajaya Chikitsa and Daivavyapashraya Chikitsa [17,18].

Discussion

Mental health concerns during childhood and adolescence arise from interactions among developmental, biological, psychological, familial, educational and environmental determinants [2,3,10]. The Ayurvedic approach described in this review is individualized and emphasizes prevention as well as management. Sattvika Ahara and a disciplined daily routine are presented as measures that may support psychological stability and healthy cognitive development. Medhya Rasayana substances such as Brahmi, Mandukaparni, Shankhpushpi and Guduchi are discussed in relation to intellectual function, memory and emotional balance[19,20,21]. Satvavajaya Chikitsa has particular relevance within the Ayurveda text because of its emphasis on mental regulation, counselling, reassurance, behavioral modification and strengthening of Dhi, Dhriti and Smriti[17]. Parental participation and emotional security are also identified as essential components of care. A supportive family environment may facilitate communication, early recognition of behavioral changes, treatment adherence and development of adaptive coping mechanisms[4,5]. The proposed integration of Ayurvedic principles with modern child psychology is presented as a potentially useful complementary framework[16,21].

Conclusion

Mental health problems during childhood and adolescence are multifactorial and warrant early recognition and appropriate intervention. The Ayurvedic framework presented in this review Conceptualizes mental well-being through the interaction of Manas, Triguna, Dosha, Dhatu, Agni and behavioral and environmental determinants. It emphasizes prevention, regulation of lifestyle, maintenance of psychological balance, strengthening of cognitive faculties and individualized management. Approaches such as Sattvika Ahara, appropriate Dinacharya, supportive family relationships, Satvavajaya Chikitsa and selected Rasayana practices are presented as components of a broader preventive and therapeutic framework [19,21].

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