

SCREEN ADDICTION IN CHILDREN THROUGH THE LENS OF ASĀTMYENDRIYĀRTHASAMĀYOGA AND ĀDHĀRAṆĪYAVEGA DHĀRAṆĀ: A COMPARATIVE LITERATURE REVIEW OF CAKRAPĀṆI AND GAṄGĀDHARA

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Abstract

Background: Compulsive and poorly regulated use of digital devices has escalated into a significant public health concern, generating neurobiological, behavioral, and psychosomatic morbidity comparable in mechanism to substance-use disorders. Although screen addiction is prevalent across all age groups, including adults, children represent a uniquely vulnerable population. Epidemiological data indicate that 26.99% of the global population meets criteria for smartphone addiction, and India reports technology addiction in approximately 10.7% of school-age children. Conventional management remains symptom-focused and incomplete.

Objective: To critically synthesize Āyurvedic evidence on compulsive screen use in children, with focus on the Navegandhāraṇīyādhyāya of Caraka Samhitā Sūtrasthāna, the doctrines of unwholesome

sensory engagement and suppressible impulses, and a comparative analysis of the commentaries of Cakrapāṇi and Gaṅgādhara.

Methods: A narrative review of classical Āyurvedic texts Caraka Samhitā with Āyurveda Dīpikā (Cakrapāṇidatta) and Jalpakalpataru (Gaṅgādhara), Suśruta Samhitā, and Aṣṭāṅgahrdayam alongside peer-reviewed biomedical literature (2015–2026) retrieved from PubMed, Google Scholar, Scopus, ResearchGate, and the DHARA portal.

Results: Compulsive screen use maps onto all three subtypes of unwholesome sensory engagement across all six sense organs, with Atiyoga of Cakṣurindriya and Manas as the primary loci. Vāta-Pitta-Tamas vitiation, Mānasika Āma accumulation, and Manovaha Srotodūṣṭi constitute the classical pathogenic axis. Cakrapāṇi identifies Prajñāparādha as the root volitional cause; Gaṅgādhara identifies direct Indriya dysfunction as the primary

physiological mechanism together providing a complementary and complete aetiological model. Evidence-aligned Āyurvedic management includes Nidāna Parivarjana, Ācāra Rasāyana, Medhya Rasāyana, Pañcakarma, Sattvāvajaya Cikitsā, and Yoga-Prāṇāyāma.

Conclusion: The Navagandhāraṇīyādhyāya provides a precise aetiological framework for screen addiction through Maulika Siddhānta, demonstrating that classical principles explain 21st-century behavioral disorders with remarkable accuracy.

Keywords: sensory organ overuse, tridoṣa vitiation, manovaha srotas, urge suppression disorders, compulsive behavior,

1. Introduction

The rapid proliferation of digital devices has fundamentally altered the developmental ecology of childhood. With approximately 6.8 billion smartphone users worldwide and a global average screen time of 6 hours 37 minutes per day, a 49-minute increase since 2019, children and adolescents are immersed in continuous, high-intensity sensory stimulation.^{1,2} Digital addiction encompasses compulsive smartphone use, sustained social media engagement, habitual gaming, and unregulated internet browsing, producing clinically significant impairments across academic, social, physical, and family domains.³ Digital Eye Strain (DES) affects 59–80% of digital device users

globally, and screen-use disorders rose 3.2-fold post-COVID-19.⁴ In India, technology addiction is reported in approximately 10.7% of school-age children.⁵ A cross-sectional study among 391 Āyurveda students found internet addiction in 82.86% of participants, 63.42% mild and 18.68% moderate.⁶ Despite cognitive-behavioural therapy (CBT), digital detox protocols, and pharmacological options, relapse rates remain approximately 30%.⁷

The Navagandhāraṇīyādhyāy part of the Svastha Catuska enumerates the Trividha Hetu of all disease: Asātmyendriyārthasamyoga, Prajñāparādha, and Pariṇāma.⁸ This single chapter is simultaneously the most relevant classical source for understanding screen addiction and the foundational text of Āyurvedic preventive medicine. The present review synthesises this classical doctrine, especially the complementary commentaries of Cakrapāṇi Datta (Āyurveda Dīpikā) and Gaṅgādhara Kavirāja (Jalpakaḷpataru), with contemporary biomedical evidence.

2. Materials and Methods

This narrative review examined Caraka Saṃhitā with Cakrapāṇidatta's Āyurveda Dīpikā, the Jalpakaḷpataru of Gaṅgādhara Kavirāja, Suśruta Saṃhitā, and Aṣṭāṅgahṛdayam, focusing on the Navagandhāraṇīyādhyāya and the Trividha Hetu. Contemporary literature was retrieved from PubMed, Google Scholar, Scopus, ResearchGate, and the DHARA portal using search terms including 'screen addiction children', 'internet

addiction India', 'Asātmyendriyārthasamyoga', 'Ādhāraṇīyavega screen', 'digital eye strain Āyurveda', 'Medhya Rasāyana cognition', and 'Padāmśika Krama'. Publications from 2015 to 2026 were prioritised; classical sources were reviewed without date restriction. Studies providing conceptual mapping or clinical evidence were included; duplicates and methodologically deficient reports were excluded.

3. Navagandhāraṇīyādhyāya: The Classical Foundation

The Navagandhāraṇīyādhyāya holds a foundational position in Āyurvedic preventive medicine. It describes the 13 Ādhāraṇīyavega Mūtra, Purīṣa, Śukra, Apāna Vāyu, Chardī, Kṣhāva, Udgāra, Jṛmbha, Kṣudhā, Trṣṇā, Aśru, Nidrā, and Śrama-Śvāsa that must never be suppressed, with each suppression producing specific and predictable disease manifestations. This causative logic maps precisely onto the pathological consequences of screen-induced urge suppression. Most significantly, this chapter contains the Trividha Hetu: ityasātmyendriyārthasamyogaḥ, prajñāparādhaḥ, pariṇāmaśceti trayastrividhavikalpa hetavo vikārāṇām. This makes the Navagandhāraṇīyādhyāya the single most clinically relevant classical chapter for screen addiction, containing both the aetiological framework and the specific mechanism through which screen overuse causes disease.

4. Classical Doctrines and Their Correspondence to Screen Addiction

4.1 Asātmyendriyārthasamyoga: Conceptual Framework

Caraka Saṃhitā defines Asātmya as that which is not conducive to the body factors that disturb dōṣic equilibrium and produce organic harm.⁹ Proper knowledge perception requires coordination across Indriyārtha (sense object), Indriya (sense organ), Manas (mind), Buddhi (intellect), and Ātmā (soul). Any disruption constitutes Asātmyendriyārthasamyoga, a primary nidāna for tridōṣa imbalance.¹⁰ Three subtypes are enumerated: Hīnayoga (deficient contact), Mithyāyoga (perverted or incorrect contact), and Atiyoga (excessive contact).^{11,29,30} In compulsive screen use, all three operate simultaneously across all six sense organs, as detailed in Table 1.

4.2 Ādhāraṇīyavega Dhāraṇā: Screen-Induced Urge Suppression

Screen addiction produces three critical vega suppressions with well-characterized classical and modern correlates.

Nidrā Vega Dhāraṇā. Nocturnal screen use suppresses the sleep urge, producing Vāta Prakopa, Dhātukṣaya, Indriya Daurbalya, and Śiraḥśūla. The short-wavelength light emitted by screens interferes with pineal melatonin synthesis, disrupting sleep onset, fragmenting sleep architecture, and impairing next-day cognitive performance a precise modern correlate.¹²

Kṣudhā Vega Dhāraṇā. Irregular or mindless eating while screen-engaged constitutes Mithyāyoga of Rasanā and disrupts the hunger urge, causing Agni Duṣṭi, Vāta Vṛddhi, and Dhātupāka disturbance. Modern correlates include metabolic syndrome, gut microbiota dysbiosis, and impaired nutrient absorption.¹⁴

4.3 Prajñāparādha: The Volitional Root

Intellectual transgression involves the wilful derangement of Dhī (intellect), Dhṛti (resolve), and Smṛti (memory).¹⁵ The child who continues device use despite awareness of harm, driven by dopaminergic reward-seeking, enacts this transgression literally. Vagbhaṭa identifies the failure to restrain compulsive desires, craving, attachment, and habituated attraction as the foundational cause of all illness.¹⁶ The habituated compulsion toward notification alerts, social media, and gaming incentives represents a contemporary manifestation of unrestrained Icchā and Lobha.

4.4 Saṃprāpti Ghaṭaka of Screen Addiction

The primary Nidāna comprises two concurrent causes: Asātmyendriyārthasaṃyoga (Atiyoga of Caḥsurindriya) and Ādhāraṇīyavega Dhāraṇā (Nidrā, Aśru, Kṣudhā). Primary Doṣas: Ālocaka Pitta and Prāṇa Vāta; secondary: Sādhaka Pitta and Vyāna Vāta. Dūṣyas: Rasa, Rakta, Māṃsa (Netra), and Majjā (neural tissue). Srotodūṣṭi: Prāṇavaha, Manovaha, Annavaha, and Rasavaha Srotas. Pūrvarūpa: eye fatigue, restlessness, difficulty with sleep onset, irritability, and headache. Rūpa:

Nidrānāśa, Akṣi Roga, cognitive fatigue, social withdrawal, and Indriya Daurbalya. This Saṃprāpti corresponds to documented neurobiological findings: dopaminergic reward pathway dysregulation, prefrontal cortical changes, HPA axis hyperactivation, and melatonin suppression from blue-light exposure.¹⁷

5. Comparative Analysis with Cakrapāṇi and Gaṅgādhara

The two principal commentaries on the Navagandhāraṇīyādhyāya offer contrasting but complementary frameworks for understanding screen addiction. Table 2 summarises their differences across six analytical dimensions.

5.1 Cakrapāṇi's Psycho-Volitional Interpretation

In the Āyurveda Dīpikā, Cakrapāṇi identifies Prajñāparādha, failure of Dhī, Dhṛti, and Smṛti as the primary driver of Asātmyendriyārthasaṃyoga. Screen addiction is fundamentally an intellectual and volitional failure before it becomes a physical disorder: the mind knowingly remains engaged with digital stimuli despite awareness of harm, willfully suppressing natural urges to sustain that engagement. Vega Dhāraṇā, in this reading, is a downstream consequence of the same Prajñāparādha. Management, therefore, emphasizes Sadvṛtta, Ācāra Rasāyana, and systematic strengthening of Dhī-Dhṛti-Smṛti through Medhya Rasāyana, Yoga, and disciplined conduct.²⁷

5.2 Gaṅgādhara's Physio-Clinical Interpretation

In the Jalpakalpataru, Gaṅgādhara analyses the direct physiological consequences of Atiyoga of Cakṣurindriya, specifically disturbing Ālocaka Pitta (the doṣa residing in the visual organ, cakṣustaijasam) and Prāṇa Vāta producing measurable Akṣi Roga and sensory fatigue. Unlike Cakrapāṇi, Gaṅgādhara views Ādhāraṇīyavega Dhāraṇā as an independent Hetu that directly aggravates Vāta Doṣa regardless of any prior intellectual transgression. Management is organ-specific: Netra Tarpaṇa and Añjana for Ālocaka Pitta kṣaya, Basti and Abhyaṅga for Vāta normalisation, Indriya Upakrama for sensory channel restoration, and strict Vega Ācaraṇa as primary prevention.

5.3 Integration: A Complete Aetiological Model

When synthesized, the two commentaries provide a complete model that neither alone supply. Cakrapāṇi explains why addiction originates and is sustained through the collapse of cognitive self-regulation (Prajñāparādha → Manovikāra). Gaṅgādhara maps what happens within the body as a result of Indriya Atiyoga → specific Doṣa vitiation → Akṣi Roga, Nidrānāśa. Together, they provide a unified framework explaining both the psychology of addiction and its somatic pathology.

6. Modern Evidence: Classical Concepts Corroborated

Contemporary biomedical research provides convergent support for the classical framework. DES affects 59–80% of screen users, corresponding

to Ālocaka Pitta kṣaya from Cakṣurindriya Atiyoga, characterized by a documented reduction in blink frequency to approximately one-third of the physiological baseline, corneal desiccation, and photophobia. Screen-related insomnia in approximately 70% of adolescent's parallels Nidrā Vega Dhāraṇā and Vāta Prakopa, mediated neurobiologically by blue-light-induced melatonin suppression.

Dopamine release at 3× baseline levels during device use corresponds to Sādhaka Pitta Kṣaya and Prajñāparādha perpetuation through unrestrained Icchā. Neuroimaging documents reduced grey matter in the anterior cingulate cortex, orbitofrontal cortex, and caudate nucleus the precise regions governing impulse control aligning with the classical deterioration of Dhī, Dhṛti, and Smṛti described by Cakrapāṇi. The 89% prevalence of partner phubbing corresponds to Mithyāyoga of Śrotrendriya and Cakṣurindriya compounded by Prajñāparādha, producing the social disconnection that both classical texts and contemporary psychology identify.¹⁹

7. Integrated Āyurvedic Management

7.1 Nidāna Parivarjana and Padāṃśika Krama

The cardinal Āyurvedic therapeutic principles mandates elimination of causative factors as the foremost management step.²⁰ Applied to screen addiction, this encompasses structured screen-time restriction, device-free periods during meals and before sleep, and avoidance of screens two hours

before bedtime. The concept of Oka Sātmya provides the classical basis for Padāmśika Krama graduated withdrawal in incremental steps (classically one-sixteenth of habitual duration per phase), replacing displaced time with physical, creative, or outdoor alternatives.²¹ This prevents withdrawal-like phenomena, irritability, craving, restlessness that cause relapse in abrupt detox protocols, aligning with neurobiological evidence favoring gradual dopaminergic downregulation.

7.2 Cakrapāṇi's Approach: Rebuilding Volitional Architecture

Cakrapāṇi's management centers on correcting Prajñāparādha through Ācāra Rasāyana disciplined screen-free conduct as medicine and Sattvāvajaya Cikitsā, directly strengthening Dhī-Dhṛti-Smṛti. Its goals mirror those of CBT: improving impulse regulation, restoring discriminative intellect, and developing conscious sensory self-regulation. Medhya Rasāyana herbs Brāhmī (Bacopa monnieri), Śaṅkhaṣṭī (Convolvulus pluricaulis), and Maṇḍūkapaṇī support this process by enhancing cholinergic and GABAergic tone, improving memory consolidation, and reducing oxidative neuroinflammation.²²

7.3 Gaṅgādhara's Approach: Indriya Restoration and Vega Ācaraṇa

Gaṅgādhara's management targets organ-level pathology directly. Netra Tarpaṇa and Ascotana address Ālocaka Pitta kṣaya; Nasya rejuvenates sensory channels. Strict Vega Ācaraṇa timely

compliance with natural Nidrā, Kṣudhā, and Aśru urges addresses all three Vegas suppressed by screen addiction. Gaṅgādhara's approach finds a striking modern parallel in the 20-20-20 rule (a 20-second distance gaze every 20 minutes), a contemporary operationalization of Indriya Upakrama that directly reduces Ālocaka Pitta stress.²⁸

7.4 Pañcakarma and Yoga-Prāṇyāma

Abhyaṅga promotes parasympathetic dominance and addresses posture-related pain reported in 48.84% of screen-using students.,²³ Śirodhārā modulates the central nervous system and restores sleep architecture.²⁴ Virecana and Basti contribute gut-brain axis regulation and direct Vāta normalisation, respectively. Nāḍī Śodhana and Bhrāmarī Prāṇyāma have demonstrated a significant reduction in internet addiction severity when integrated with CBT protocols.²⁵ Yoga Nidrā restores sleep architecture, while Dhyāna strengthens Dhṛti, counteracting Prajñāparādha at its cognitive root.²⁶

8. Critical Appraisal and Limitations

The Āyurvedic framework is internally coherent, classically grounded, and demonstrates convergent validity with contemporary neuroscience. A peer-reviewed systematic review concluded that Āyurveda provides a complementary mind-body framework for digital addiction and called for standardized clinical trials.¹⁷ A cross-sectional study established empirical prevalence data for

Atiyoga of Cakṣurindriya and internet addiction. Limitations include the scarcity of randomized controlled trials for Āyurvedic interventions in screen-addicted children. Most evidence derives from related conditions, such as anxiety, insomnia, and cognitive impairment, requiring careful extrapolation. Standardized Āyurvedic assessment tools for digital behavioral disorders in pediatric populations are unavailable. Future research should integrate Young's Internet Addiction Test with Āyurvedic Prakṛti assessment and longitudinal follow-up.

9. Discussion

Screen addiction in children is a disease of misalignment between sensory faculties and their appropriate objects, between cognitive resolve and compulsive desire, between natural biological rhythms and technology-imposed disruption. The Navagandhāraṇīyādhyāya had already identified this category of disease causation millennia before digital devices existed. The complementary commentaries of Cakrapāṇi and Gaṅgādhara together provide a more complete aetiological and therapeutic model than either alone could supply.

Cakrapāṇi's insight that addiction is fundamentally a volitional failure before it becomes a physical disorder aligns with neuroimaging evidence of prefrontal hypofunctioning preceding behavioural addiction. Gaṅgādhara's Doṣa-Indriya pathology maps precisely to documented organ-level consequences: Ālocaka Pitta kṣaya producing DES,

Prāṇa Vāta imbalance producing sleep disruption, and Vyāna Vāta producing restlessness and postural complaints. What Āyurveda uniquely contributes is constitutional individualisation placing each child's Prakṛti, Dōṣic tendency, and family context at the centre of therapeutic design. Padāṃśika Krama, Sattvāvajaya Cikitsā aligned with CBT goals, and evidence-supported Medhya Rasāyana together position Āyurveda as a genuinely integrative system for this condition.

10. Conclusion

The Navagandhāraṇīyādhyāya provides a complete aetiological framework for screen addiction through two doctrines from the same chapter: Asātmyendriyārthasamyoga and Ādhāraṇīyavega Dhāraṇā. Cakrapāṇi's psycho-volitional interpretation and Gaṅgādhara's physio-clinical analysis are complementary dimensions of the same disease process, explaining respectively why screen addiction occurs and what it does to the body. Maulika Siddhānta explains 21st-century behavioral disorders with remarkable accuracy. The Āyurvedic management repertoire Nidāna Parivarjana, Padāṃśika Krama, Ācāra Rasāyana, Medhya Rasāyana, Indriya Upakrama, Sattvāvajaya Cikitsā, Yoga-Prāṇāyāma, and Dinācarya is evidence-aligned, constitutionally individualized, and child-centered. Systematic research integrating Āyurvedic diagnostics with validated addiction instruments is essential to realize this framework's full potential for protecting children in the digital age.

Acknowledgements

The authors express gratitude to the Department of Samhita Siddhanta and Sanskrit, Amrita School of Āyurveda, Amrita Vishwa Vidyapeetham, Kollam, Kerala, for their valuable guidance, insightful suggestions, and careful reading of the manuscript.

Declarations

Conflict of Interest: The authors declare no conflict of interest.

Funding: No external funding was received for this work.

Ethical Approval: Not applicable (narrative review based on published literature).

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Table 1. Asātmyendriyārthasamyoga: Correspondence to screen addiction across all six sense organs

Indriya	Artha	Yoga type	Screen addiction form	Doṣa affected
<i>Caṅsu</i>	Rūpa	Atiyoga	Prolonged screen viewing overuse of Ālocaka Pitta	Ālocaka Pitta
<i>Śrotra</i>	Śabda	Atiyoga	Sustained loud earphone / headphone use	Prāṇa Vāta
<i>Tvak</i>	Sparśa	Mithyāyoga	Device vibration dependency; displacement of physical activity	Vyāna Vāta
<i>Ghrāṇa</i>	Gandha	Hīnayoga	Reduced outdoor exposure; deficient olfactory engagement	Prāṇa Vāta
<i>Rasānā</i>	Rasa	Mithyāyoga	Irregular or mindless eating during screen use Agni disruption	Samāna Vāta / Agni
<i>Manas</i>	Mānasa artha	Atiyoga	Continuous digital stimulation with no mental rest or withdrawal	Sādhaka Pitta / Prāṇa Vāta

Note. Atiyoga = excessive contact; Mithyāyoga = perverted or incorrect contact; Hīnayoga = deficient contact.

Adapted from Caraka Saṃhitā Sūtrasthāna 7.

Table 2. Comparative analysis of Cakrapāṇi and Gaṅgādhara on screen addiction pathogenesis

Aspect	Cakrapāṇi (Āyurveda Dīpikā)	Gaṅgādhara (Jalpakaḷpataru)
Perspective	Psycho-volitional (Mānasika Hetu)	Physio-clinical (Śārīrika Hetu)
Root cause	Prajñāparādha derangement of Dhī, Dhṛti, Smṛti	Direct Indriya dysfunction leading to Doṣa vitiation
Atiyoga of Cakṣu	Intellectual error sustaining compulsive screen engagement	Direct Ālocaka Pitta and Prāṇa Vāta disturbance
Vega dhāraṇā	Downstream consequence of Prajñāparādha wil:ful urge suppression	Independent nidāna directly aggravating Vāta Doṣa
Pathological outcome	Mānasika Vyādhi precedes Śārīrika Vyādhi	Measurable Doṣa vitiation: Akṣi Roga, Nidrānāśa
Management	Sadvṛtta, Ācāra Rasāyana, Dhī-Dhṛti-Smṛti strengthening	Indriya Upakrama, Vega Ācaraṇa, Netra Tarpaṇa, Rasāyana

Note. Āyurveda Dīpikā: Cakrapāṇidatta's commentary on *Caraka Saṃhitā*. Jalpakaḷpataru: Gaṅgādhara Kavirāja's commentary on *Caraka Saṃhitā*.

Table 3. Integrated Āyurvedic management for compulsive screen use in children

Intervention	Classical reference	Mechanism / supporting evidence	Target doṣa	Primary indication
<i>Nidāna Parivarjana</i>	Ca. Vi. 3/24	Reduces dopaminergic overstimulation; restores prefrontal inhibitory control	Vāta, Pitta	All digital disorders first-line step
<i>Ācāra Rasāyana</i>	Ca. Ci. 1/4	Disciplined screen-free conduct; corrects Prajñāparādha at the volitional level	Tamas, Rajas	Intellectual transgression
<i>Brāhmī (Bacopa monnieri)</i>	Ca. Ci. 1/3–4	Modulates cholinergic/GABAergic pathways; enhances memory; reduces neuroinflammation	Vāta, Pitta	Cognitive impairment, anxiety
<i>Aśvagandhā (Withania somnifera)</i>	Ca. Ci. 1/2	HPA axis modulation; cortisol reduction; adaptogenic; improves sleep quality	Vāta, Pitta	Chronic stress, insomnia

<i>Jaṭāmāṁsī</i> (<i>Nardostachys</i> <i>jatamansi</i>)	Medhya Rasāyana	Anxiolytic; calms Prāṇa Vāta; promotes restful sleep during digital detox	Vāta, Pitta	Restlessness, detox support
<i>Abhyaṅga</i>	Ca. Su. 5/88–89	Promotes parasympathetic dominance; reduces neuromuscular tension	Vāta	Hyperactivity, postural pain
<i>Śirodhārā</i>	Su. Ut. 18/14– 19	CNS modulation; suppresses sympathetic overdrive; restores sleep architecture	Vāta, Pitta	Sleep disorders, anxiety
<i>Netra Tarpaṇa,</i> <i>Añjana, Nasya</i>	A.H. Su. 13/15	Relieves Ālocaka Pitta kṣaya: ocular strain, dryness, photophobia, visual fatigue	Vāta, Pitta	Digital eye strain (Indriya Upakrama)
<i>Yoga and</i> <i>Prāṇāyāma</i>	Ca. Su. 1/58	ANS regulation; reduces cortisol; significant reduction in internet addiction severity when combined with CBT	Vāta, Rajas	Anxiety, compulsive use
<i>Sattvāvajaya</i> <i>Cikitsā</i>	Ca. Su. 1/58	Strengthens Dhī-Dhṛti- Smṛti; parallels CBT goals; builds conscious sensory self-regulation	Tamas, Rajas	Prajñāparādha, self-regulation deficit
<i>Padāṁśika</i> <i>Krama</i>	Oka Sātmya	Graduated 1/16th-step screen-time reduction; prevents withdrawal phenomena	Vāta, Tamas	Established dependency
<i>Sāttvika Āhāra</i> <i>and Dinācarya</i>	Ca. Su. 5/1–2	Restores circadian rhythm; reduces reward-seeking; supports neurochemical balance	All Doṣas	Prevention, lifestyle regulation

Note. Ca. = Caraka Saṁhitā; Su. = Suśruta Saṁhitā; A.H. = Aṣṭāṅghṛdayam; HPA = hypothalamic-pituitary-adrenal; CBT = cognitive-behavioural therapy; ANS = autonomic nervous system.