

AN AYURVEDIC FRAMEWORK FOR UNDERSTANDING SMARTPHONE ADDICTION: ETIOLOGICAL FACTORS, PATHOGENESIS AND CONTEMPORARY CORRELATIONS

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ABSTRACT

Background: Smartphone addiction is an emerging behavioural health concern associated with excessive and uncontrolled digital-device use, with reported effects on sleep, psychological well-being, cognition, and daily functioning. Although not explicitly described in the Ayurvedic classics, its manifestations can be interpreted through established concepts of mental and behavioural disorders. **Objective:** To explore the Ayurvedic correlation of smartphone addiction with Manovaha Srotodushti and elucidate its etiopathogenesis through classical principles. **Methods:** A narrative review of classical Ayurvedic texts and contemporary scientific literature was undertaken. Concepts including Prajnaparadha, Asatmyendriyartha Samyoga, Indriyatiyoga, Dhi–Dhriti–Smriti Vibhramsha, Raja–Tama Dosha, Manovaha Srotodushti, Prana Vata, and

Nidranasha were critically examined and conceptually correlated with behavioural, psychological, and sleep-related manifestations of smartphone addiction. **Key Findings:** Excessive smartphone use may be interpreted as Prajnaparadha, involving impairment of Dhi, Dhriti and Smriti, while excessive sensory exposure reflects Asatmyendriyartha Samyoga and Indriyatiyoga. These disturbances may contribute to Raja–Tama predominance, Manovaha Srotodushti, and Prana Vata aggravation, providing a conceptual explanation for compulsive

behaviour, cognitive and emotional disturbances, and Nidranasha. **Conclusion:** Smartphone addiction can be conceptually understood through an Ayurvedic framework integrating Prajnaparadha, sensory overuse, mental Dosha predominance, and Manovaha Srotodushti. This framework may provide a basis for future clinical and experimental research into Ayurvedic approaches to technology-related behavioural and sleep disturbances.

KEYWORDS: Smartphone addiction, Problematic smartphone use, Manovaha Srotodushti; Prajnaparadha, Asatmyendriyarth Samyoga, Nidranasha.

INTRODUCTION

Smartphones have become an indispensable component of contemporary life, transforming communication, education, healthcare, entertainment, commerce and professional activities. Their widespread accessibility and multifunctionality have substantially improved convenience and productivity. However, the rapid expansion of smartphone use has also led to the emergence of problematic smartphone use (PSU) or smartphone addiction, a behavioural condition characterized by compulsive use, impaired control over screen time, preoccupation with smartphone-related activities, and continued engagement despite awareness of adverse consequences.^[1] Owing to its increasing prevalence, particularly among adolescents and young adults, smartphone addiction has emerged as an important public health concern worldwide.

A growing body of evidence indicates that excessive smartphone use is associated with numerous physical, psychological and social health consequences, including anxiety, depression, stress, impaired cognitive performance, reduced academic and occupational productivity, musculoskeletal discomfort and deterioration in quality of life.^[2] Among these complications, sleep disturbance represents one of the most consistently reported consequences. Night-time smartphone use suppresses melatonin secretion through prolonged exposure to blue light, disrupts circadian rhythm, delays sleep onset, and impairs sleep quality.^[3] Furthermore, continuous engagement with rewarding digital content activates dopaminergic reward pathways, reinforcing compulsive behaviour and perpetuating dependence on smartphones.

Although smartphone addiction is not explicitly described in the Ayurvedic classics, its behavioural manifestations can be interpreted through established Ayurvedic principles related to Manasika Vyadhi. Persistent smartphone use despite awareness of its harmful

consequences closely resembles Prajnaparadha,^[4] arising from impairment of Dhi, Dhriti, and Smriti. Likewise, prolonged exposure to visual, auditory, and cognitive digital stimuli represents Asatmyendriyarthā Samyoga.^[5] and Indriyatiyoga, resulting in excessive sensory stimulation, predominance of Raja and Tama Doshas and disturbance of normal mental functions. These pathological events ultimately lead to Manovaha Srotodush ti, aggravation of Prana Vata, and the development of Nidranasha.

Among these Ayurvedic concepts, Manovaha Srotodushti provides a particularly comprehensive framework for understanding the pathogenesis of smartphone addiction. Continuous digital stimulation disturbs the normal functioning of Manas, resulting in impaired cognition, emotional dysregulation, compulsive behaviour, and sleep disturbances. Thus, Manovaha Srotas may be regarded as the principal site of pathology linking excessive sensory stimulation with behavioural addiction and its neuropsychological consequences.

Despite the rapidly expanding literature on smartphone addiction, comparatively little attention has been devoted to its comprehensive interpretation through Ayurvedic principles. Most available studies primarily focus on psychological, neurobiological, and behavioural aspects, whereas an integrated Ayurvedic explanation encompassing Prajnaparadha, Asatmyendriyarthā Samyoga, Raja–Tama Dosha and Manovaha Srotodushti remains limited. Establishing such a conceptual correlation may provide a holistic understanding of the etiopathogenesis of smartphone addiction and generate a scientific basis for future experimental, clinical, and integrative research.

Therefore, the present conceptual review aims to critically analyse smartphone addiction through the Ayurvedic perspective of Manovaha Srotodushti, while exploring the roles of Prajnaparadha, Asatmyendriyarthā Samyoga, Indriyatiyoga, Raja–Tama Dosha and Nidranasha in its etiopathogenesis.

Current Understanding of Smartphone Addiction

Smartphones have become an integral part of daily life, serving as indispensable tools for communication, education, entertainment, healthcare, business, and social interaction. Despite their undeniable benefits, excessive and uncontrolled smartphone use has emerged as a growing public health concern, giving rise to Problematic Smartphone Use (PSU) or smartphone addiction. Although smartphone addiction is not currently recognized as an independent psychiatric disorder in major diagnostic classifications such as the Diagnostic

and Statistical Manual of Mental Disorders (DSM-5-TR) or the International Classification of Diseases (ICD-11),^[5] it is widely regarded as a behavioural addiction that shares several clinical features with other non-substance addictions, including impaired control, compulsive use, craving, tolerance, withdrawal-like symptoms, and continuation of use despite harmful consequences.

Recent epidemiological studies indicate that smartphone addiction is increasingly prevalent among adolescents and young adults owing to the widespread availability of internet-enabled devices, social media platforms, online gaming, and instant messaging applications. Excessive smartphone use has been associated with a broad spectrum of adverse health outcomes, including anxiety, depression, psychological stress, reduced attention span, impaired executive functioning, musculoskeletal disorders, visual fatigue, decreased academic and occupational performance, and diminished quality of life. Among these complications, sleep disturbance remains one of the most consistently reported and clinically significant consequences.^[6]

The pathophysiology of smartphone addiction involves complex interactions between neurobiological, psychological, and behavioural mechanisms. Continuous engagement with rewarding digital content stimulates the mesolimbic dopaminergic reward pathway, particularly the ventral tegmental area (VTA) and nucleus accumbens, resulting in repeated dopamine release and reinforcement of compulsive smartphone-seeking behaviour. Repeated activation of this reward circuitry gradually weakens executive control exerted by the prefrontal cortex, reducing behavioural inhibition and increasing dependence on smartphones.

Night-time smartphone use further contributes to sleep disturbances through prolonged exposure to blue light, which suppresses melatonin secretion by the pineal gland and disrupts the normal circadian rhythm. Simultaneously, emotionally stimulating digital content, social interactions, gaming, and continuous notifications increase cognitive and emotional arousal, delaying sleep onset, reducing sleep duration, fragmenting sleep architecture, and impairing overall sleep quality. Chronic sleep deprivation subsequently contributes to fatigue, impaired cognition, emotional instability and reduced self-regulation, creating a vicious cycle that further reinforces compulsive smartphone use.

Current evidence therefore suggests that smartphone addiction is a multidimensional behavioural disorder involving neurobiological reward mechanisms, excessive sensory

stimulation, impaired cognitive control, emotional dysregulation, and circadian rhythm disruption. While modern medicine primarily explains these alterations through behavioural neuroscience and neuropsychology, Ayurveda provides a complementary conceptual framework that interprets these manifestations in terms of disturbed mental faculties, improper sensory engagement, and derangement of Manovaha Srotas. Exploring these classical concepts may provide a holistic understanding of the etiopathogenesis of smartphone addiction and establish a foundation for integrative preventive and therapeutic approaches.

Ayurvedic Perspective of Smartphone Addiction

Although smartphone addiction is not explicitly described as a distinct disease entity in the Ayurvedic classics, its behavioural, psychological and sleep-related manifestations can be comprehensively understood through established Ayurvedic principles governing Manasika Vyadhi. Ayurveda considers health to be a harmonious state of the body (Sharira), mind (Manas), senses (Indriyas), and soul (Atma). Disturbance of this equilibrium due to improper lifestyle practices, impaired mental faculties and inappropriate interaction between the sense organs and their objects ultimately leads to disease. Smartphone addiction represents one such contemporary behavioural disorder that can be interpreted through these classical concepts.

One of the fundamental concepts underlying smartphone addiction is Prajnaparadha (intellectual error), which is regarded by Acharya Charaka as a principal cause of disease. Individuals with smartphone addiction continue excessive smartphone use despite being aware of its adverse consequences on physical health, mental well-being, productivity and sleep. This persistent engagement reflects impairment of Dhi (intellect), Dhriti (self-control) and Smriti (memory), resulting in repeated unhealthy behaviour despite adequate knowledge of its harmful effects. Thus, compulsive smartphone use may be considered a modern manifestation of Prajnaparadha-induced behavioural dysregulation.

Excessive interaction with smartphone screens, social media platforms, online gaming, digital entertainment and continuous notifications also represents Asatmyendriyarthasamyoga, particularly Indriyatiyoga, wherein the visual (Chakshurindriya), auditory (Shrotrendriya), and mental (Manas) faculties are exposed to excessive and inappropriate sensory stimulation. Persistent sensory overindulgence disturbs the normal functioning of the mind, aggravates

Raja and Tama Doshas and weakens Sattva, thereby promoting restlessness, emotional instability, craving and compulsive behavioural patterns.

These pathological events ultimately culminate in Manovaha Srotodushti, which may be regarded as the central pathological mechanism underlying smartphone addiction. Continuous digital stimulation impairs cognition, emotional regulation, behavioural control, and higher mental functions, resulting in compulsive smartphone use and progressive psychological dependence. Simultaneously, aggravation of Prana Vata interferes with normal sensory regulation and sleep physiology, leading to Nidranasha. From this perspective, smartphone addiction may be interpreted not merely as excessive device use but as a psychosomatic disorder characterized by disturbed mental homeostasis and dysfunction of Manovaha Srotas.

Accordingly, Ayurveda provides a holistic framework that extends beyond the behavioural manifestations of smartphone addiction by emphasizing its underlying mental, sensory and constitutional disturbances. This perspective highlights that excessive smartphone use is not simply a technological habit but a consequence of disturbed cognition, impaired self-regulation, excessive sensory indulgence and derangement of mental channels. Such an interpretation establishes the conceptual foundation for understanding the etiopathogenesis of smartphone addiction and forms the basis for the detailed discussion of its individual Ayurvedic determinants in the subsequent sections of this review.

Ayurvedic Etiological Determinants of Smartphone Addiction

Although smartphone addiction is not described as a distinct disease entity in the classical Ayurvedic literature, its development can be understood through several established etiological principles governing Manasika Vyadhi. Ayurveda recognizes that diseases arise from the interaction of cognitive, emotional, behavioural, sensory and constitutional factors that disturb the equilibrium of the mind and body. In the context of smartphone addiction, repetitive digital engagement, impaired self-regulation, excessive sensory stimulation, and disturbed mental functioning may be interpreted through classical concepts such as Prajnaparadha, Asatmyendriyarthasamyoga, Indriyatiyoga, Raja–Tama Dosha predominance, Avara Satva and Manovaha Srotodushti. These interconnected factors collectively contribute to the initiation, progression and maintenance of compulsive smartphone use and its associated psychological and behavioural manifestations. The principal Ayurvedic etiological determinants are discussed below.

Table No. 1: Ayurvedic Framework of Etiological Factors in Smartphone Addiction.

Psychological Factors	Prajnaparadha ^[4] Dhi Vibhramsha ^[7] Dhriti Vibhramsha ^[7] Smriti Vibhramsha ^[7] Vishada ^[8] Shoka ^[9]
Behavioural Factors	Abhyasa ^[10] Sadvritta Varjana ^[11]
Manasika Factors	Raja Tama Dosa Pradhanata ^[12] Avara Satva ^[13]
Sensory Factors	Asatmyendriyarth Samyoga ^[14] Atiyoga of Chakshurendriya, Shrotrendriya and Manas ^[3] Indriyatiprayoga ^[16]
Constitutional Factors	Vata & Pitta Prakriti ^[17] Ojas Kshaya ^[18] Nidranasha ^[19]

Psychological Factors

1. Prajnaparadha (Failure of Cognitive Judgment)^[4]

प्रज्ञापराधाद् हि पापानि सर्वाणि जायन्ते नृणाम् ।

Prajnaparadha is regarded in Ayurveda as one of the principal causes of disease and refers to the impairment of higher mental faculties, leading an individual to knowingly perform harmful actions. According to Acharya Charaka, it arises from the derangement of Dhi (intellect), Dhriti (self-control) and Smriti (memory). In smartphone addiction, individuals continue excessive smartphone use despite recognizing its adverse effects on sleep, cognition, mental well-being, and social functioning. Thus, compulsive smartphone use may be conceptually interpreted as Prajnaparadha-janya Vyasana, in which repeated intellectual error initiates and perpetuates maladaptive behavioural patterns. The roles of Dhi, Dhriti and Smriti Vibhramsha are discussed below.

2. Dhi Vibhramsha (Impairment of Intellect/ Judgment)^[7]

Dhi is the intellectual faculty responsible for reasoning, discrimination, and judging wholesome from unwholesome actions. Dhi Vibhramsha refers to impaired judgment, resulting in faulty decision-making. In smartphone addiction, individuals underestimate the harmful effects of prolonged smartphone use while overestimating its immediate rewards,

such as entertainment, social interaction, or temporary stress relief. Consequently, they fail to recognize the long-term consequences of excessive screen time, predisposing them to compulsive smartphone use.

3. Dhriti Vibhramsha (Impaired Behavioural Control)^[7]

Dhriti represents self-control, determination, and the ability to regulate behaviour according to proper knowledge. Dhriti Vibhramsha occurs when this capacity is weakened, resulting in an inability to resist unhealthy impulses despite knowing their harmful effects. In smartphone addiction, individuals repeatedly check notifications, scroll through social media, or engage with digital content despite being aware of its negative impact on sleep, productivity, and mental well-being. Thus, Dhriti Vibhramsha contributes to the loss of behavioural control and progression towards compulsive smartphone use.

4. Smriti Vibhramsha (Failure of Behavioural Learning)^[7]

Smriti is the faculty of memory that enables individuals to recall previous experiences and apply them in present decision-making. Smriti Vibhramsha denotes impairment of this recollective function, leading to failure to learn from previous adverse experiences. In smartphone addiction, individuals repeatedly engage in excessive smartphone use despite previously experiencing disturbed sleep, eye strain, fatigue, reduced concentration, and impaired daily functioning. Immediate gratification overrides recollection of these negative consequences, reinforcing compulsive behaviour and perpetuating smartphone dependence.

Factor	Question	Smartphone Example
Dhee	Is this good or bad?	"Late-night scrolling isn't a problem."
Dhriti	Can I stop myself?	"I know I should stop, but I can't."
Smriti	Do I remember what happened last time?	"Yesterday I lost sleep, but I still do it again."

5. Vishada (Mental Dejection)^[8]

विषादो नाम मनसोऽवसादः ।

Vishada, described by Acharya Charaka as a state of mental dejection, may act as both a predisposing and perpetuating factor in smartphone addiction. Individuals experiencing low mood, emotional distress, or lack of motivation may increasingly rely on smartphones for temporary distraction and emotional relief. Although digital engagement provides short-term gratification, excessive use further aggravates mental exhaustion, social isolation, and sleep disturbances, creating a vicious cycle. Prolonged Vishada weakens Satva while increasing

Raja and Tama Doṣas, impairing judgment and self-regulation. Thus, Vishada contributes to the initiation and persistence of compulsive smartphone use as a form of Manasika Vyasana.

6. Shoka (Emotional Grief)^[9]

इष्टवियोगजः शोकः ।

Shoka, described by Charaka as grief arising from the loss or separation from a desired person or object, is an important emotional factor affecting mental health. In the context of smartphone addiction, unresolved grief, interpersonal conflicts, or emotional deprivation may predispose individuals to excessive smartphone use as a means of distraction and emotional coping. Although digital engagement provides temporary relief, it fails to resolve the underlying emotional distress and instead reinforces dependence on smartphones. Prolonged Shoka weakens Sattva, aggravates Tama Dosha and impairs emotional resilience and self-control, thereby contributing to the initiation and persistence of smartphone addiction as a Manasika Vyasana.

Behavioural Factors

1. Abhyasa (Habit Formation)^[10]

अभ्यासात् क्रियते कर्म ।

Abhyasa refers to the repeated performance of an action that gradually becomes habitual. In the context of smartphone addiction, frequent engagement with smartphones for communication, entertainment, or information progressively transforms purposeful use into automatic and compulsive behaviour. Repeated digital engagement reinforces reward-seeking behaviour and weakens voluntary behavioural control, resulting in persistent smartphone use despite awareness of its adverse consequences. Thus, Abhyasa acts as an important sustaining factor that perpetuates compulsive smartphone use and facilitates its progression into Manasika Vyasana, adversely affecting mental health, daily functioning, and lifestyle discipline.

2. Sadvritta Varjana (Neglect of Healthy Conduct)^[12]

सद्वृत्तमनुतिष्ठेत् ।

Sadvritta refers to the code of ethical conduct and disciplined lifestyle prescribed in Ayurveda for the maintenance of physical, mental and social well-being. Charaka emphasizes that adherence to Sadvritta promotes balance of the mind and healthy behaviour. In the context of

smartphone overuse, Sadvritta Varjana denotes the neglect or abandonment of these ideal practices. Excessive engagement with smartphones often leads to disregard for daily routines, professional responsibilities, interpersonal relationships and social etiquette. Individuals may develop habits such as excessive screen use during work, meals or social interactions, reflecting a decline in self-discipline and mindful conduct. Furthermore, smartphone overuse disrupts Dinacharya and social harmony, fostering inattentiveness, irritability and ethical lapses. Persistent neglect of Sadvritta weakens moral restraint and self-regulation, thereby facilitating continued indulgence in excessive smartphone use. Thus, Sadvritta Varjana plays a contributory role in the development and perpetuation of smartphone overuse as a Manasika Vyasana.

Manasika Factors

1. Raja and Tama Dosa Pradhanata (Mental Doṣa Predominance)^[12]

रजस्तमश्च मनसो दोषौ ।

According to Ayurveda, Raja and Tama are the principal Doshas of the mind responsible for psychological and behavioural disturbances. In smartphone addiction, predominance of Raja Doṣa manifests as excessive mental activity, craving, restlessness, compulsive smartphone checking, and constant stimulation-seeking behaviour. Conversely, Tama Dosha is reflected by mental dullness, reduced motivation, social withdrawal, and dependence on prolonged digital engagement. Continuous exposure to social media, gaming, and digital content aggravates Raja and Tama while suppressing Sattva, resulting in impaired judgment, diminished self-control, and disturbed mental equilibrium. Thus, Raja–Tama Dosha Pradhanyata plays a significant role in the initiation and persistence of smartphone addiction as a Manasika Vyasana.

2. Avara Satva (Low Mental Resilience)^[13]

अवरं सत्त्वं भयक्लेशासहिष्णु ।

Avara Satva refers to diminished mental strength characterized by poor tolerance to stress, fear, and emotional adversity. According to Charaka, individuals with Avara Satva are more susceptible to psychological disturbances due to reduced coping capacity. In the context of smartphone addiction, limited emotional resilience may predispose individuals to seek temporary relief from stress, anxiety or boredom through excessive smartphone use. Repeated reliance on digital engagement as a coping mechanism reinforces dependence,

impairs self-regulation, and makes it difficult to limit screen time despite adverse consequences. Thus, Avara Satva acts as a predisposing factor for the development and persistence of smartphone addiction as a Manasika Vyasana.

Sensory Factors

1. Asatmyendriyarth Samyoga (Improper Sensory Interaction)^[14]

असात्म्येन्द्रियार्थसंयोगाद् रोगाः सम्भवन्ति ।

Asatmyendriyarth Samyoga, described by Acharya Charaka as an important cause of disease, refers to the improper or unwholesome interaction between the sense organs (Indriyas) and their respective objects. In smartphone addiction, this is manifested through prolonged exposure to smartphone screens, artificial light, rapidly changing visual content, and continuous auditory notifications. Such excessive sensory stimulation disrupts the normal functioning of the visual, auditory, and mental faculties, resulting in sensory fatigue and disturbed mental processing. Persistent non-congenial sensory exposure aggravates Raja and Tama Doshas, impairs cognitive regulation, and promotes compulsive smartphone use. Thus, Asatmyendriyarth Samyoga represents an important etiological factor contributing to smartphone addiction as a Manasika Vyasana.

2. Atiyoga of Chakshurendriya, Shrotrendriya and Manas (Excessive Sensory and Mental Stimulation)^[15]

Atiyoga refers to excessive utilization of the sense organs beyond their physiological capacity. In smartphone addiction, continuous exposure to digital devices results in Atiyoga of Chakshurendriya (visual sense organ), Shrotrendriya (auditory sense organ) and Manas (mind). Prolonged screen viewing, exposure to artificial light, rapidly changing visual content and continuous scrolling excessively stimulate Chakshurendriya, leading to eye strain, visual fatigue and disturbed sleep. Similarly, constant notifications, music, videos and auditory stimulation produce Atiyoga of Shrotrendriya, resulting in mental irritation, reduced concentration and sensory fatigue.

Simultaneously, persistent engagement with social media, gaming and digital interaction continuously stimulates Manas, producing mental restlessness, emotional instability and inability to remain psychologically calm without smartphone use. Excessive sensory and mental stimulation aggravates Raja Guna and Vata Dosha, disturbs cognitive regulation and weakens sensory control. Over time, this continuous overactivation of the sensory pathways

and mind contributes to compulsive smartphone use, disturbed sleep and mental exhaustion. Thus, Atiyoga of Chakshurendriya, Shrotrendriya and Manas plays a significant role in the development and persistence of smartphone addiction as a form of Manasika Vyasana.

3. Indriyatiprayoga (Excessive Utilization of Sense Organs)^[16]

अतियोगोऽयोगो मिथ्यायोगश्चेन्द्रियाणाम्

Indriyatiprayoga, described by Acharya Charaka, refers to the improper utilization of the sense organs. Among its three forms—Atiyoga (excessive use), Ayoga (underuse) and Mithyayoga (misuse)—Atiyoga is most relevant to smartphone addiction. Prolonged smartphone use results in excessive stimulation of the Chakshurendriya through continuous screen exposure and the Shrotrendriya through persistent notifications, music, and multimedia content. This excessive sensory engagement disturbs normal sensory regulation, producing eye strain, sensory fatigue, mental restlessness and impaired concentration. Persistent Indriya Atiyoga aggravates Raja Dosha, weakens sensory restraint, and promotes compulsive smartphone use. Thus, Indriyatiprayoga constitutes an important etiological factor in the development and persistence of smartphone addiction as a Manasika Vyasana.

Constitutional Factors

1. Vata & Pitta Prakriti^[17]

According to Ayurveda, Prakriti represents the inherent constitutional makeup of an individual, which influences physical characteristics, psychological traits and susceptibility to diseases. Individuals with predominant Vata and Pitta Prakriti may be more prone to smartphone addiction. Persons with Vata Prakriti are generally characterized by increased mental activity, curiosity, restlessness, impulsiveness and a tendency toward anxiety. These attributes may predispose them to frequent smartphone checking, excessive social media engagement and difficulty disengaging from digital devices. Continuous smartphone use further aggravates Vata Dosha, leading to manifestations such as disturbed sleep, poor concentration, mental fatigue and emotional instability. Pitta Prakriti is characterized by ambition, competitiveness and a strong desire for achievement. These traits may promote excessive smartphone use for stimulation, information seeking and social engagement. Continuous smartphone exposure further aggravates Vata and Pitta Dosha, leading to manifestations such as disturbed sleep, irritability, anxiety and poor concentration.

2. Ojas Kshaya^[18]

ओजः क्षये मनसो व्यथा ।

Ojas is the vital essence responsible for physical vitality, mental stability, and resistance to disease. According to Charaka, depletion of Ojas results in mental distress and psychological imbalance. In the context of smartphone addiction, prolonged sensory stimulation, excessive mental activity, irregular lifestyle, and sleep deprivation may contribute to Ojas Kshaya. Its depletion manifests as fatigue, reduced concentration, anxiety, emotional instability, and diminished stress tolerance. As Ojas supports Sattva, its decline weakens psychological resilience, making individuals more susceptible to compulsive smartphone use as a source of temporary gratification. Thus, Ojas Kshaya may contribute to the development and persistence of smartphone addiction as a Manasika Vyasana.

3. Nidranasha (Sleep Disturbance)^[19]

निद्रानाशात् क्लैब्यं दुर्बलता च ।

Nidra is one of the three Upastambhas essential for maintaining physical and mental health. According to Charaka, deprivation of sleep leads to physical and psychological debility. In smartphone addiction, prolonged screen exposure, excessive night-time use, and continuous mental stimulation delay sleep onset and disrupt the normal sleep–wake cycle, resulting in Nidranasha. Sleep deprivation impairs concentration, emotional regulation, and self-control while aggravating Prana Vata and Raja Dosha, thereby reinforcing compulsive smartphone use. Thus, Nidranasha acts as both a consequence and a perpetuating factor in smartphone addiction, creating a self-sustaining vicious cycle.

Central Role of Manovaha Srotodushti in Smartphone Addiction

Concept of Manovaha Srota^[20]

According to Ayurveda, Manovaha Srotas are the functional channels responsible for the proper functioning of Manas (mind), facilitating cognition, perception, memory, emotions, decision-making, and behavioural regulation. These channels maintain harmonious coordination between Manas, Buddhi, Indriyas and Atma, thereby preserving normal psychological and cognitive functions. Any disturbance in these channels results in impaired mental processing, emotional instability, altered behaviour and various Manasika Vyadhi. Thus, Manovaha Srotas constitute the fundamental functional substrate governing mental health.

Pathogenesis of Manovaha Srotodushti

Smartphone addiction may be interpreted as a disorder primarily involving Manovaha Srotodushti. Continuous exposure to digital stimuli through smartphones results in excessive utilization of Chakshurindriya, Shrotrendriya and Manas, producing Asatmyendriyarthasamyoga and Indriyatiyoga. Persistent sensory over-stimulation gradually impairs the normal functioning of higher mental faculties and promotes Prajnaparadha, characterized by Dhi, Dhriti, and Smriti Vibhramsha.

Subsequently, prolonged sensory indulgence leads to predominance of Raja Guna, manifested by craving, restlessness, compulsive smartphone checking and inability to disengage from digital devices. With chronic exposure, Tama Guna also becomes aggravated, resulting in mental dullness, emotional withdrawal, impaired motivation and behavioural dependence. The combined predominance of Raja and Tama disturbs the equilibrium of Manas, producing functional derangement of Manovaha Srotas.

This pathological disturbance further aggravates Prana Vata, which governs cognition, sensory perception, attention and higher mental activities. Aggravated Prana Vata interferes with normal sensory withdrawal before sleep, contributes to persistent mental hyperarousal, and ultimately results in Nidranasha. Thus, Manovaha Srotodushti represents the pivotal pathological event linking excessive digital sensory stimulation with compulsive smartphone behaviour and disturbed sleep.

Clinical Significance of Manovaha Srotodushti in Smartphone Addiction

The concept of Manovaha Srotodushti provides a comprehensive Ayurvedic explanation for the behavioural, cognitive, emotional and sleep-related manifestations observed in smartphone addiction. Impairment of these mental channels manifests clinically as reduced concentration, impaired decision-making, diminished self-control, emotional instability, compulsive smartphone use, anxiety, stress and sleep disturbances. Unlike modern behavioural models that primarily emphasize neurochemical alterations and reward circuitry, Ayurveda interprets these manifestations as consequences of disturbed mental homeostasis resulting from impaired cognition, excessive sensory stimulation and derangement of Manovaha Srotas.

Therefore, smartphone addiction may be conceptualized as a Manasika Vyadhi in which Manovaha Srotodushti serves as the central pathological mechanism integrating Prajnaparadha, Asatmyendriyartha Samyoga, Raja–Tama Dosha predominance, Prana Vata aggravation, and Nidranasha into a unified Ayurvedic framework. This perspective not only explains the etiopathogenesis of smartphone addiction but also provides a scientific rationale for preventive strategies aimed at restoring mental equilibrium through regulation of sensory input, behavioural discipline, and preservation of psychological well-being.

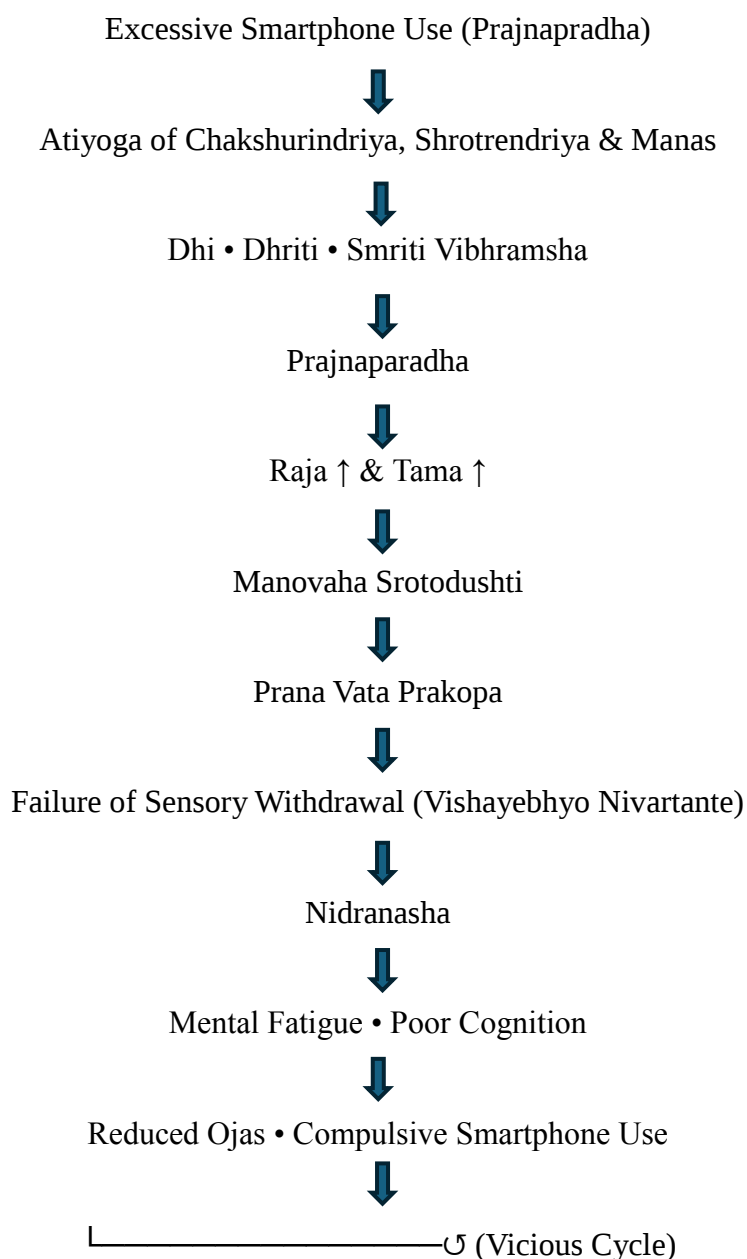


Figure 1: Proposed Ayurvedic Etiopathogenetic Pathway of Smartphone Addiction.

Integrating Modern Neurobiology with Ayurvedic Concepts

Although smartphone addiction is primarily explained in modern medicine through behavioural neuroscience, several neurobiological mechanisms show conceptual similarities with Ayurvedic principles governing mental health. Rather than representing direct equivalents, these parallels provide an integrative framework that enhances the understanding of smartphone addiction from both traditional and contemporary perspectives.

Dopaminergic Reward Pathway and Prajnaparadha

Repeated exposure to rewarding smartphone activities, including social media interactions, online gaming, short-form videos, and instant notifications, activates the mesolimbic dopaminergic reward pathway, particularly the ventral tegmental area (VTA) and nucleus accumbens. Recurrent dopamine release reinforces reward-seeking behaviour, gradually reducing executive control and increasing compulsive smartphone use. From an Ayurvedic perspective, this persistent engagement despite awareness of adverse consequences resembles Prajnaparadha, resulting from impairment of Dhi, Dhriti and Smriti, whereby the individual loses the capacity for appropriate judgment, self-restraint, and behavioural regulation.

Executive Dysfunction and Dhi–Dhriti–Smriti Vibhramsha

Modern neuroscience recognizes that chronic behavioural addiction weakens the regulatory functions of the prefrontal cortex, impairing decision-making, impulse control, working memory, and behavioural inhibition. Individuals become increasingly unable to resist smartphone use despite recognising its harmful effects. Ayurveda interprets these manifestations through Dhi Vibhramsha (impaired judgment), Dhriti Vibhramsha (loss of self-control) and Smriti Vibhramsha (failure to recall previous adverse experiences), which together constitute the cognitive basis of Prajnaparadha.

Hyperarousal, Circadian Rhythm Disruption and Nidranasha

Prolonged night-time smartphone use exposes the eyes to blue light, suppressing melatonin secretion by the pineal gland and delaying the circadian sleep–wake rhythm. Simultaneously, emotionally stimulating digital content increases cortical arousal and sympathetic nervous system activity, delaying sleep onset and reducing sleep quality. Ayurveda correlates this state with aggravation of Prana Vata and Raja Dosha, which prevent the physiological withdrawal of the senses required for the initiation of Nidra, ultimately leading to Nidranasha.

Emotional Dysregulation and Raja–Tama Dosha

Modern studies have demonstrated strong associations between smartphone addiction and anxiety, emotional instability, depression, stress, and fear of missing out (FOMO). Persistent emotional stimulation and dependence on digital rewards disrupt normal psychological regulation. Ayurveda explains these manifestations through predominance of Raja Doṣa, producing restlessness, craving, impulsivity, and excessive mental activity, followed by Tama Doṣa, resulting in mental dullness, withdrawal, reduced motivation, and behavioural dependence. The combined predominance of Raja and Tama weakens Sattva, thereby impairing psychological resilience.

Sensory Overstimulation and Asatmyendriyarthā Samyoga

Continuous exposure to rapidly changing visual images, digital notifications, background music, and interactive media imposes excessive stimulation upon the visual, auditory, and cognitive systems. Modern neuroscience recognises that such persistent sensory overload contributes to attentional fatigue, cognitive overload, and impaired emotional regulation. Ayurveda conceptualises this phenomenon as Asatmyendriyarthā Samyoga, particularly Indriyatiyoga, wherein excessive utilisation of the Chakshurindriya, Shrotrendriya and Manas disturbs normal sensory processing and initiates pathological changes within Manovaha Srotas.

Integrated Conceptual Model

Although modern neuroscience and Ayurveda employ different theoretical frameworks, both recognise that excessive and repetitive digital stimulation progressively impairs cognitive regulation, emotional balance, behavioural control, and sleep. Modern science attributes these alterations to dysregulation of reward pathways, executive dysfunction, hyperarousal, and circadian rhythm disturbance, whereas Ayurveda interprets them through Prajnaparadha, Asatmyendriyarthā Samyoga, Raja–Tama Dosha predominance, Manovaha Srotodushti, Prana Vata aggravation, and Nidranasha. These perspectives should be regarded as conceptual parallels rather than direct biological equivalents, providing a comprehensive and integrative understanding of smartphone addiction.

CURRENT EVIDENCE

Recent evidence consistently demonstrates that excessive smartphone use is associated with poor sleep quality, delayed sleep onset, anxiety, depression, impaired cognition, reduced academic performance, and diminished quality of life. Night-time smartphone use, particularly through prolonged exposure to blue light, suppresses melatonin secretion,

disrupts circadian rhythm, and contributes significantly to insomnia. Neurobiological studies further indicate that smartphone addiction shares characteristics with behavioural addictions, involving alterations in dopaminergic reward pathways, executive control, attention, and emotional regulation.

Although smartphone addiction is not described as a distinct disease entity in the Ayurvedic classics, several concepts including Prajnaparadha, Asatmyendriyarthā Samyoga, Raja–Tama Dosha predominance, Manovaha Srotodushti and Nidranasha provide a plausible framework for understanding its pathogenesis. Clinical studies have also reported beneficial effects of Nasya Karma, Shirodhara, Medhya Rasayana, Yoga, Pranayama and lifestyle interventions in improving sleep quality and psychological well-being. However, direct clinical evidence evaluating Ayurvedic interventions specifically for smartphone addiction remains limited.

RESEARCH GAPS

Despite growing interest in smartphone addiction, several important gaps remain. Most studies have focused on psychological and neurobiological aspects, while its interpretation through Ayurvedic principles remains largely conceptual. Clinical evidence evaluating Ayurvedic interventions for smartphone addiction is scarce and standardized Ayurvedic diagnostic criteria have not yet been established. Furthermore, the relationships between Manovaha Srotodushti, Prana Vata, Prakriti and modern neurobiological mechanisms require systematic scientific validation. Future research should emphasize well-designed clinical trials, objective biomarkers, neuroimaging and interdisciplinary collaboration to strengthen the evidence base for integrative management of smartphone addiction.

DISCUSSION

The present review proposes a comprehensive Ayurvedic framework for understanding smartphone addiction through the concept of Manovaha Srotodushti. Although smartphone addiction is not explicitly described in the classical Ayurvedic texts, its behavioural, cognitive, emotional, and sleep-related manifestations can be interpreted using established concepts such as Prajnaparadha, Asatmyendriyarthā Samyoga, Raja–Tama Dosha predominance, Prana Vata aggravation, and Nidranasha. Rather than representing isolated mechanisms, these factors appear to interact sequentially, culminating in the derangement of Manovaha Srotas, which emerges as the principal pathological event.

The review highlights Prajnaparadha as the primary cognitive determinant of smartphone addiction. Impairment of Dhi, Dhriti and Smriti results in poor judgment, reduced self-control, and failure to learn from previous adverse experiences, thereby promoting repeated smartphone use despite awareness of its harmful consequences. Similarly, Asatmyendriyarthasamyoga, particularly Atiyoga of Chakshurindriya, Shrotrendriya and Manas, provides an Ayurvedic explanation for the excessive sensory stimulation produced by prolonged exposure to digital devices. These disturbances aggravate Raja and Tama Doshas, impair mental regulation, and predispose individuals to compulsive smartphone use.

Another important observation of this review is the conceptual integration of Ayurveda with contemporary neuroscience. Modern evidence describing dopaminergic reward pathways, executive dysfunction, circadian rhythm disruption, and hyperarousal demonstrates conceptual parallels with Ayurvedic principles such as Prajnaparadha, Prana Vata aggravation, and Nidranasha. These parallels should be interpreted as complementary explanatory models rather than direct biological equivalence, providing an integrative perspective for understanding behavioural addiction.

The proposed framework also has important clinical implications. It suggests that smartphone addiction should not be viewed merely as excessive technology use but as a disorder involving disturbed cognition, inappropriate sensory engagement, and impaired mental regulation. Consequently, preventive strategies emphasizing Sadvritta, Dinacharya, digital hygiene, Yoga, meditation, and other Ayurvedic lifestyle measures may complement conventional behavioural interventions and contribute to improved mental well-being.

However, this review is conceptual in nature and has certain limitations. The proposed correlations are based on classical Ayurvedic principles and currently available scientific literature, without direct experimental validation. Furthermore, evidence evaluating Ayurvedic interventions specifically for smartphone addiction remains limited. Therefore, well-designed clinical studies, mechanistic research, and interdisciplinary collaborations are required to validate these concepts and establish evidence-based integrative management strategies.

CONCLUSION

Smartphone addiction has emerged as a significant behavioural health concern with profound psychological, cognitive, and sleep-related consequences. Although it is not explicitly

described as a distinct disease entity in the Ayurvedic classics, its clinical manifestations can be comprehensively interpreted through established Ayurvedic principles. The present review suggests that smartphone addiction may be understood as a Manasika Vyadhi, wherein Prajnaparadha, Asatmyendriyarthasamyoga, Indriyatiyoga, Raja–Tama Dosha predominance, and Prana Vata aggravation collectively contribute to the development of Manovaha Srotodushti, which appears to be the central pathological mechanism underlying compulsive smartphone use and Nidranasha.

The proposed conceptual framework provides an integrative understanding of smartphone addiction by bridging classical Ayurvedic principles with contemporary knowledge of behavioural neuroscience. Rather than viewing excessive smartphone use solely as a behavioural habit, Ayurveda interprets it as a consequence of disturbed cognition, inappropriate sensory engagement, impaired behavioural regulation and dysfunction of the mental channels. This perspective broadens the understanding of smartphone addiction and offers a holistic basis for preventive and therapeutic approaches.

Although current evidence supports the conceptual relevance of Ayurveda in understanding behavioural addiction, robust clinical and mechanistic evidence remains limited. Future interdisciplinary research integrating Ayurveda with neuroscience, psychology, sleep medicine, and digital health is essential to validate these conceptual correlations and develop evidence-based integrative strategies for the prevention and management of smartphone addiction.

Overall, the Ayurvedic perspective presented in this review contributes to a broader understanding of smartphone addiction and highlights the potential role of traditional principles in addressing one of the most important lifestyle-related behavioural disorders of the digital era.

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