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Case Report

Ayurvedic Non-pharmacological intervention for Gadget addiction

Management of Gadget Addiction Through Ayurveda in Pediatric Patient: A Single Case Study

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Abstract: 11-year-old male patient brought by relatives in Kaumarbhritya OPD with complaints of spending excessive time on smartphones and computers with changes in the patient's behavior since 1 year. Relatives counseled the patient, but he didn't change his behavior. Previous Doctors advised Cognitive behavioral therapy, but that facility was not available at their place, and the parents could not afford it. Hence they came to Ayurveda Hospital. The patient is assessed using the Internet addiction test scale and DSM-V scale for social behavior. The patient is diagnosed as a case of Gadget addiction (internet addiction) with abnormal social behavior. After proper physical examinations, the patient is counseled in explaining the hazardous effects of excessive use of gadgets; along with this, he is advised daily Suryanamskara, &Dhyana(meditation) as a Yoga intervention. The patient was advised to play outdoor games daily, and his gadgets using time were reduced by systematic order. Parents were advised to be patient in family functions and social meetings & to spend time with children. All the training regarding intervention is given in PPT format to the patient. The patient was asked to perform Suryanamaskara on follow-up days. On the 91st day, the patient was reassessed using the Internet addiction test scale and DSM-V scale for social behavior, which were normal. Gadget addiction is a common behavioral problem in children. Online gaming, gambling, excessive web browsing, and social media use are all included under the umbrella term "gadget addiction.". Even if there is treatment for gadget addiction, people in remote areas may find it inconvenient due to a lack of infrastructure and specialized pediatric psychologists. Hence, finding an effective and convenient treatment for Gadget addiction is necessary. This study aims to assess the efficacy of Ayurvedic management in Gadget addiction based on Ayurveda Non-pharmacological intervention. Any addiction results from bad decision-making capacity and less control over the mind. The intervention in this study, like Yoga, satvavajaya, proves beneficial to the patient.

Keywords- Ayurveda, Gadget addiction, *Kaumarbhritya, Satvavajaya, Yoga*, *Suryanamaskara,*

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1. INTRODUCTION

Addiction can be described as a process in which behavior, which has the potential to both bring about pleasure and provide relief from internal discomfort, is used in a pattern that is marked by a repeated inability to control the behavior (powerlessness) and persistence in the behavior despite grave negative effects (un-manageability).[1]"Gadget addiction" includes excessive mobile use, online gaming, gambling, internet browsing, and social media use. Addiction to Gadgets is negatively correlated with psychosocial issues in adolescents[2] Addiction to gadgets causes a decrease in physical activity, which causes early fat deposition. According to research, stressful environments encourage people to get addicted. [3] Gadget addiction is a behavioral type of addiction, and there are similarities between Gadget and drug addiction[4]. The mesolimbic brain circuit plays a vital role in behavior due to addiction[5].The *Ayurveda* concept*of AsatmeindriyarthaSamyoga* (It denotes abusing the senses by engaging in unhealthy activities) and *Pradnyaparadh*[6] (Deranged cognition, control, and memory are the causes of pradnyaparadha) goes much equivalent to today's Gadget addiction. The mind's ability to inhibit behaviour is delayed in gadget addiction; VataDosha is responsible for mind control[7].Addiction to gadgets affects intellect, which is associated with Sadhakapitta[8]. The function of Buddhi impacts a person's intellect, self-control, and memory. From the aforementioned clinical trait, we can infer that Buddhi is the primary dushya in gadget addiction. Adhishthan(site) of disease is *Man.*Raj Guna and TamoGuna's predominant characteristics are relatable to clinical characteristics of gadget addiction.[9]Thus, to achieve a person's proper mental equilibrium, we must strengthen Satvaguna while reducing Tam and Raja Guna. This can be possible by proper counseling, assurance, *SadvrittaPalanaDhyana*and utilization of *Madhya rasayana*[10]. Gadget addiction affects children all over the world. Children addicted to gadgets can be found anywhere the internet is accessible. Several researchers are working to find a treatment and explore non-pharmacological and pharmacological treatments for gadget addiction. However, viable treatment approaches call for both skilled professionals and a robust infrastructure, neither present in developing nor underdeveloped nations. Hence Yoga and PadanshikKrama are non-pharmacological therapies that are also cost-effective, require little infrastructure, and are used in this study.

1.1 Effects of Gadgets on Children

The children stopped playing with others because they were offered the gadget as a substitute for their playmates. The gadgets quickly satisfy children with the knowledge they gain through the internet and technologies. Nowadays, many institutes and families promote Gadgets over traditional learning methods for academic purposes. Unlike the internet, which encourages narrow thinking, traditional learning investigates numerous things. Neuroimaging studies have shown that Gadget addiction is linked to structural and functional alterations in brain areas. Gadget addiction is related to a reduction in prefrontal cortex grey matter volume.[11] According to research, gadget addiction harms cognitive performance.[12] Social isolation[13], impaired social skills[14,] Poor academic performance[15], Attention deficit hyperactivity disorder[16], Depression and suicidal ideation.[17] It has been reported to be associated with alcohol abuse[18] and Sleep deprivation[19] are common adverse effects of excessive use of gadgets. Along with these, physical problems like Neck pain, Thumb pain, Eye problem, and Obesity are commonly associated with Gadget addiction. Sari and Marlina (2021) state that Gadgets negatively affect children with fixed thoughts, irritated eyes, inactivity, and cyberbullying threats.[20] According to Febrianto (2017), the significant effect of using devices on youngsters is a lack of social skills. Because of a lack of understanding of social ethics, addicted children never cared about the environment. Also, they were more emotional as a result of their resistance.[21]

2. CASE REPORT

2.1 Ethical Approval Statement

The treatment was started after taking the whole history of the present illness. Before that, the idea about illness and the treatment required was given to the patient's parents. After getting written consent drom the parents in favor of treatment, the study was started. Institutional Human Ethical Committee approves the present study. (Ref No. MGACHRC/IEC-Oct 2022/614). The written informed consent of the participant's parents was taken.

2.2 Present Complaints (In Chronological Order)

An 11-year-old male patient was brought by his parents to *Balroga* OPD for complaints of excessive time spent playing video games or on a smartphone, reduced interactions with friends and relatives, Lack of interest in surroundings and sports, Eye pain and Eye irritation, the patient had these complaints for 1 year.

2.3 History of present illness:

The patient had a one-year history of the illness. He was playing a lot of video games and used his phone. He has subpar academic performance and needs more social interaction with family and classmates. Hence came for the *Balroga* OPD.

2.4 History of past illness

Admitted for U.T.I. last year

2.5 Family history

[H/O- DM/HTN/IHD/TB/Leprosy /Asthma/Genetic Disorders]- No

2.6 Hereditary disorders

No

2.7 Dietary history

Type of Food-biscuit & other bakery product consumption,

Appetite: Good

2.8 Personal history

Bowel Movements- Constipation
Micturition-Normal
Sleep- sleeps only for 5 hours.

Hygiene- Good
Habits- Bed Wetting/ PICA/Nail Biting- No

2.9 *General Examination*

Built: Obese
Gait: Normal
Pulse: 80 / min
Temperature: 98.4f
B.P: 105/ 76mmhg
RR: 28/ min
No e/o - Icterus/Organomegaly/Lymphadenopathy/Edema

2.10 *Anthropometry*

Weight – 29 kg, Height – 142 cm,

2.11 *Ashtavidhparikshana*

A. *Nadi*(pulse) = 80/min.
B. *Mala (stool)* = *Malavashmbha* (constipation),.
C. *Mutra (urine)* = Normal.
D. *Jivha (tongue)* = *Saam*(coated).
E. *Agni* = Normal
F. *Shabda (speech)* = *Prakrut*(Normal).
G. *Sparsha (Skin)* = *Prakrut*(Normal).
H. *Druk (Eyes)* = *Netradaha (*eye irritation*)*
I. *Bala(Strength)* = *Madhyama*(Medium).

2.12 *Assessment Tools*

1)Young's Internet Addiction test scale[23].
2) DSM-V criteria for social behavior.[24]

2.13 MANAGEMENT

Table 1: Ayurveda intervention used in the management of patients.

SrNo	Intervention	Details of method	Duration & Frequency
1	*Counseling*	counselling on the risks of mobile use and the disadvantages of mobile addiction	once every two weeks with the parents and the kid individually
2	*Yoga* therapy	*Surya Namaskar, Dhyana*	Daily
3	Encouragement for in &outdoor games	The patient was advised to play games both inside and outside every day.	Daily for 1 hour
4	Encouragement towards attending social programs	Parents were advised to encourage their children to participate in group activities with peers, attend etiquette lessons, and learn new things.	'Si-opus sit' Whenever required &feasible
5	Encouragement of parent-child relationship	Parents were instructed to spend time with their children. The reward for not using a mobile device	Minimum 2 hours of quality time daily by parents
6	Targeted reduction in Gadget use time	Time spent on gadgets was replaced with activities requiring bravery, cognitive skill development, athletics, and yoga.	By *Padanshikkrama*i.e reduce Gadget use time by ¼ part each week

Table 1. illustrates the Ayurveda interventions used for the management of patients. During counseling, where ever required, PowerPoint presentations were used to educate the patient and his parents. Instructionon Surya Namaskar and Dhyana techniques was provided. The patient was asked to do the proposed *Suryanamaskara* and *Dhyana*on the assessment day. Total treatment was advised for 90 days; follow-up was taken on the 91st day.

2.14 OBSERVATION

Table 2: Complaints of patients before and after treatment

Complaint	Before treatment	After treatment on the 91stDay
Screen time	5 hours daily	Reduced to 1 hour
Communication with friends and family	No or minimal communication	Spend sufficient time with family and friends.

Table 2. illustrates the effect of treatment in the reduction of complaints of patients. The time spent on screen by the patient was reduced to 1 hour, and the communication with family and friends, which were equal to absent, improved. He spends sufficient time with family and friends rather than using gadgets. The above assessment was done based on questions from the patient's parents.

Table 3: Young`s Internet Addiction Test scale

Young's Internet Addiction test scale score	Before treatment	After treatment
How often do you find that you stay online longer than you intended?	3	1
How often do you neglect household chores to spend more time online?	3	0
How often do you prefer the excitement of the Internet to outdoor games?	4	0
How often do you form new relationships with fellow online users?	3	1
How often do others complain about the amount of time you spend online?	4	1
How often do your grades or school work suffer because of the amount of time you spend online?	3	1

How often do you check your social media apps before something else that you need to do?	4	2
How often does your Hobby suffer because of the Internet?	4	0
How often do you become defensive or secretive when anyone asks you what you do online?	3	0
How often do you block out disturbing thoughts about your life with soothing thoughts of the Internet?	2	0
How often do you find yourself anticipating when you will go online again?	4	2
How often do you fear life without the Internet would be boring, empty, and joyless?	2	0
How often do you snap, yell, or act annoyed if someone bothers you while you are online?	4	2
How often do you lose sleep due to being online?	5	1
How often do you feel preoccupied with the Internet when offline or fantasize about being online?	2	0
How often do you say, "Just a few more minutes" online?	5	1
How often do you try to cut down your time online and fail?	4	1
How often do you try to hide how long you've been online?	5	2
How often do you spend more time online than going out with others?	5	2
How often do you feel depressed, moody, or nervous when offline, which goes away once you return online?	3	1
Total	72	18

Table no.3 illustrates the effect of Ayurveda intervention on Young's internet addiction test. The score was calculated by asking questions given to the young's internet addiction test to the patient. After hearing the subject's answer, the5-point Likert scale was used to select the responses (0, 1, 2, 3, 4, or 5) that best describe the patient.

Table 4: Assessment of social behavior by DSM-V scale.

Sr no	Social behavior assessment criteria	Score	Score before treatment	Score after treatment
1	No evidence of difficulty or abnormality in people. The child's behavior is appropriate for his age	1	4	1
2	Mildly abnormal relationship. The child may avoid looking the adult in the eye, may avoid the adult or become fussy if the interaction is forced, maybe excessively shy	2		
3	Moderately abnormal relationship: persistent and forceful attempts are necessary to get the child's attention at times	3		
4	Severely abnormal relationship: The child is consistently aloof or unaware of what the adult is doing and rarely responds to the adult or initiates contact with the adult or the fellow children	4		
Sr no	**Assessment of eye contact**	**Score**	**Score before treatment**	**Score after treatment**
1	Age-appropriate visual response: The child's visual behavior is normal and appropriate for a child of that age	1	4	1
2	Mildly abnormal visual response: The child may be more interested in looking at a gadget or may occasionally stare off into space	2		
3	Moderately abnormal visual response: The child may stare into the gadget, avoid looking people in the eye, look at the gadget from an unusual angle or hold objects very close to the eyes even though they can see them normally	3		
4	Severely abnormal visual response: The mind flutters, and the child consistently avoids looking at people or certain objects	4		
	Total score (Social behavior assessment +Assessment of eye contact)		8	2

Table no.4 illustrates the effect of Ayurveda intervention on the patient's social behavior. The assessment was done with the DSM V scale. The score was calculated by asking questions to the patient.

3. DISCUSSION

Addiction is characterized as a behavior over which a person has diminished control and which has negative effects[24].It can also be seen as the outcome of "mindless" moods characterized by escape-seeking behaviors, automatic thought patterns, emotional reactivity, social isolation, and poor self-control. The frequent use of gadgets causes sensory overload, revitalizing the mind for subjective experience, and the affinity of these experiences causes adverse effects. Addiction (of any kind) impairs a person's mental capacity, which makes it difficult for them to make morally sound decisions. The mind needs regulating ability to make any decisions. According to Ayurveda, Dhee is the component that controls the action of the mind[25] The symptomatic

nature of smartphone addiction is explained by mental disorders, such as mental indolence (Styana), idleness, dullness; indecision and doubt (Samsaya); carelessness, negligence, and procrastination (Pramad); indolence (Alasya); craving for pleasure and sensuality (Avirati); false perception and false views (Brantidarsana); failure to achieve desired results Alabdhabumikat (Anavasthitatva). The effects of these are manifested in the body as sadness (Dukha), depression (Daurmanasya), shaking off the body (Aangamejayatva), and irregular breathing (SvasaprasvasaVikshepa) as a sickness (Vyadhi)[26]. Direct management of any addiction is not mentioned anywhere in the literature of Ayurveda. Still, by comprehending the role of doshadushya in Gadget addiction, we can conclude that management of gadget addiction can be done based on *ManasaRoga* treatment principles which are proper counseling, assurance, memory enhancing, providing knowledge and meditation.[27]Ashwasana (reassuring and explaining), Suhritvakya (guidance and suggestion), and DharmarthaVakya (educating the individual and family) are the types of satvavajayachikitsa that were used in treating this case[28]. Yoga can cleanse our mind, soul, and body and control our emotions[29,30]; this phenomenon is helpful in conditions such as addiction, yearning, compulsive behavior, tolerance, and relapse. Consistent yoga activates the alpha, beta, and theta brainwaves related to memory, mood, and anxiety improvements. Mental tension and depression are typical causes of addictive behavior[31].Yoga poses have somatopsychic effects, which include the production of endorphins that make people feel calm, at peace, and relaxedin good health as a practitioner[32].By adjusting the breath cycles, pranayama regulates irregular brainwave impulses·Rapid breathing, or pranayama, has been shown to considerably lower anxiety and stress levels and impact the brain regions responsible for processing emotions, paying attention, and being conscious[33].According to studies, mindfulness meditation improves the quality of life, sleep[34], somatosensory processing[35], and emotional reactivity[36].Additionally, it successfully regulates the levels of stress[37], anxiety[38], and sadness[39].According to studies on addiction, practicing meditation enhances prefrontal activation[40], which may aid in de-automatizing addictive behaviors and enhancing cognitive abilities[41], reaction inhibition[42], self-control[43], psychological well-being[44], and desire abstinence[45]. The easy way to switch from unwholesome things to adopting wholesome things by 1/16th part[46] is by using the PadamshikKrama. In a Padamshikkrama, bad habits or objects should be abandoned, and good habits should be adopted. Daily time spent on gadgets was reduced to 1/16th of that amount to effectively treat Gadget addiction and replaced with beneficial habits or creative endeavors. And besides being helpful to patients, Ayurvedic interventions like Satvavajaya (psychotherapy), Yoga, and Aachar Rasayana require nothing in the way of infrastructure, and most of these treatments are completely free. It will be simple for the patient to adopt such measures because the importance and method of yoga are widely known among Indians and are commonly practiced.

4. CONCLUSION

With the help of Ayurveda intervention, Gadget addiction in patients was cured effectively with improvement in the patient's social behavior. This case study explores how Ayurvedic practices can effectively treat gadget addiction. A better outcome for avoiding gadget addiction came via yoga and *Satvavajaya.* The youngster can regulate their craving and decrease relapse using these therapeutic options. Additionally, Ayurvedic medicine's therapeutic approach aids in enhancing kids' social skills. It can help in further prevention of gadget addiction in children. It is a single case report. For more research, studies can be conducted using a larger sample size.

5. AUTHORS CONTRIBUTION STATEMENT

The notion that was given was created by Dr. Prasad Yewale. He created the theory and carried out the calculations. Dr. RenuRathi approved the analytical techniques, encouraged Dr. Prasad Yewale to research the idea, and oversaw the conclusions. Each author contributed to the final text and talked about the findings.

6. CONFLICTS OF INTEREST

Conflict of interest declared none.

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