

Causes and Consequences of Behavioral Addiction: A Systematic Review

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ABSTRACT

In this era of advancement and innovation, people have to match the speed of the fast pace world. People are held hostage of substance which is commonly known as *addiction*. The addiction that is still unknown in our society is non- substance addiction or *behavioral addiction*. Behavioral addiction works on short term reward, happiness or threshold of excitement in our disturbed or stressful life or spiking up neurotransmitter dopamine in the human body. This study works to discover the major causes and consequences of non-substance addiction. The present study includes a comprehensive analysis of the causes and consequences of Internet Addiction, Gambling, Pornography/ Sexual Addiction and Video Game Addiction. The study delves into the intricate dynamics of behavioral addiction by using 31 researches from Sage Publication, Shodhganga, PubMed and Researchgate. According to the systematic analyses the study found that the etiological factor that explains behavior addiction includes *Biological Factors/Genetics and Pathological Family*. In addition to it stress, gender differences and comorbidity with conditions like anxiety and depression were also concluded as the possible causal factors. The common causes of behavioral addiction are *Psychological Distress, Physical Injury and Social Withdrawal*. The paper has further suggested its future implications paving way for further research.

Keywords: *Causes and Consequences, Behavioral Addiction*

Addiction is a condition or state of physical and psychological dependence on the use of drugs or any other substance like tobacco, activities or behavior like gambling, sex or excessive exercise. It is a condition where a person is unable to control themselves to engage in a particular drug or behavior. It provides people with short term reward that suddenly increase the level of neurotransmitters like dopamine in individual's body. In order to get that dopamine level people get addicted to some chemical or behavior. These addictions work to disrupt the daily life of an individual as it directly impacts your memory, decision making ability, auditory functioning and also impacts your physical body. This repetitive behavior may cause dysfunction in human brain especially in prefrontal cortex. The person who is highly addictive is unaware of the negative impact of their delinquent behavior as according to them it makes them feel good. American Mental Association has classified Addiction as a disease

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since 1956. The American Society of Addiction Medicine describes addiction as "a primary, chronic disease of brain reward, motivation, memory and related circuitry, complex interactions among brain circuits, genetics, the environment, and an individual's life experiences.

The behavioral health field has struggled for decades to debunk the myths and misconceptions about the nature of drug and alcohol addiction. People with a substance use disorder were thought to be morally flawed and lacking in willpower rather than seen as suffering from a disease. Labels and terms such as "addict" and "alcoholic"—even substance "abuse" and "drug abuse"—persist today and further stigmatize the disease and individuals who have the condition. This language and these views shape society's responses to substance use disorder, treating the condition as a moral failing rather than a complex behavioral health issue, which leads to an emphasis on punishment rather than disease prevention and treatment. This could be better understood through an example: suppose a child likes to play video games every day. This could be your hobby or habit and you start playing it for 8-9 hours of the day. In order to play you skip your meals and even when you take breaks, your mind is revolving around game character, game lobby as well as what happened in your game. If this takes away a significant amount of time every day and continues for days in a stretch so here this became an obligation.

Addiction to a substance or behavior makes you feel that your whole life is revolving around that particular object. The individual will crave the whole day. It may feel like you lost your control on yourself, will find oneself hopeless and helpless. This may create a disinterest in other activities and those activities will no longer make you feel excited or happy. An individual who has developed addiction to a substance or behavior will feel lack of emotional response as well as withdrawal or not being able to accept their own emotions. This will hamper their overall wellbeing. According to Dr. George (Director of National Institute on Alcohol abuse and Alcoholism) addiction is misperceived as a choice or moral problem and all one has to do is to stop engaging in compulsive activities. In contrary to this misconception, the brain actually changes with addiction and it takes a good deal of work to get it back to its normal state. The more drugs or alcohol you've taken, the more disruptive it is to the brain. Research has found that addiction has the power to destroy your brain. A healthy brain normally flows with day to day activities like - eating, swimming, sleeping, working, making important decisions, going grocery shopping etc. Your brain works and motivates you to repeat those actions regularly. When one is healthy, your brain alarms you to get out from harming or fearful situations like if you buy things out of your budget then your brain's frontal region will help you to decide the consequences, but when you become addicted then this alert situation turn into a kidnaper working against your rationality.

Behavioral addiction

Behavioral addiction is the addiction of certain behavior which gives us short term rewards. This may create a burden to the society because this may cause disability, accident, disease etc. There are many day to day activities that may cause behavior addiction and as one is directed by his/her *ID* they continue to engage in activities that provide them pleasure. The desire or need for that behavior is very high and the person is unable to live without that behavior leading to disruption in life. In some cases people can also show "withdrawal" means negative emotion and not doing anything if he/she not allowed indulging in that behavior. The 'urge' to engage in these behaviours boosts the dopamine level in the brain and work as a reward system. In substance abuse addiction dopamine is not just created due to chemical what it is and deep seated psychological belief that this will be rewarded. Here our brain works to give what we want so when we engage in drugs our brain regards. Whereas in certain food addictions sugar,

carbohydrate, and caffeine are physically addictive they produce a certain amount of energy in our body just because of that you crave for more. The various types of behavioral addiction includes:

Gambling addiction

Gambling addiction, also known as pathological gambling or gambling disorder, is a psychological condition characterized by the compulsive and uncontrollable urge to gamble. It continues despite the negative consequences it may have on one's life. It is also defined as placing something valuable at risk so that the person is able to win something that may lead to satisfaction as well as disturbance. The following are the many stages of gambling:

- **Winning Phase-** The person gambles to acquire thrill or to cope with the stressor. During this phase, the person either gains money by winning or wins numerous games.
- **Losing Phase-** The gambler keeps thinking about gambling or increases their wagers to offset the loss. **Desperation phase-** The person begins to experience relationship and health issues, as well as a sense of helplessness and desperation brought on by gambling. He or she keeps having winning fantasies and commits crimes to fund their gambling.
- **Phase of hopelessness-** This is when a person begins to entertain negative thoughts about the future and his or her capacity to solve present-day issues, which can cause psychological issues.

Internet addiction

Internet addiction, also known as problematic internet use or internet gaming disorder, refers to a condition where individuals exhibit excessive and compulsive behaviours related to their internet usage. These behaviours can lead to negative consequences in various aspects of their life, such as social relationships, work or school performance, and physical health. Internet addiction often involves an inability to control internet use, preoccupation with online activities, withdrawal symptoms when not online, and neglect of other important responsibilities.

Compulsive buying

Compulsive buying addiction, also known as compulsive shopping disorder or *oniomania*, is a behavioral addiction characterized by an irresistible urge to shop and make purchases, often resulting in excessive and unnecessary spending. Individuals with this addiction experience a lack of control over their shopping impulses, leading to financial problems, relationship conflicts, and emotional distress.

Eating addiction

"Eating addiction" isn't a formally recognized medical or psychiatric term. However, it's important to note that some individuals may struggle with compulsive or unhealthy eating habits that can have negative effects on their physical and mental health. These behaviours may fall under the category of eating disorders, such as binge eating disorder or compulsive overeating.

Work addiction

Work addiction, also known as work holism, is a behavioral addiction characterized by an excessive and compulsive need to work, often to the detriment of one's physical and mental health, as well as personal relationships. People who struggle with work addiction may prioritize work over other aspects of life, experience high levels of stress, and have difficulty disconnecting from work-related activities.

Sex addiction

Sex addiction, also known as compulsive sexual behavior or hyper sexuality, is a controversial and debated concept within the field of psychology and psychiatry. It refers to a pattern of sexual behavior characterized by an inability to control one's sexual impulses, leading to excessive and often risky sexual activities. Some common signs of sex addiction may include engaging in sexual activities despite negative consequences, neglecting responsibilities in favor of sex, and experiencing distress or impairment in daily life due to one's sexual behavior.

Biology of addiction

Every behavior that we learn involves the transmission of information through nerve cells. Information transmission occurs in two ways. First - transmission within the nerve pathway is by electrical impulse. Second- transmission from one cell to another involves a chemical substance called neurotransmitter. When a person does something that he/she likes the most that makes them feel good and satisfies them like eating chocolate, receiving money and playing games result in activation of pleasure. This involves cortex and subcortical areas.

The review of research by Berridge and Kringelbach suggested that pleasure involves three aspects, the feeling of pleasure, the motivation and behavioral change. Thus, the pleasurable feeling associated with sexual orgasm, according to them these things arise because of activity in the meso-cortico-limbic system. According to Kalwas and Votkow addiction appears in three stages:

- First - The rewarding effect in the release of dopamine, which seems to be "wanting" or motivational aspects. This will create short term change which is temporary because protein persists only for a few hours.
- Second - In this stage repetition of activity of dopamine release influences the accumulation of more stable protein that results in permanent structural change in the cell.
- Final - Addiction involves the relapse in the nervous system. This change in cells creates a period of withdrawal and permanent features of addiction. As a result the addicted person finds it harder to quit.

METHODOLOGY

Objective

The objectives of the present study are as follow:

1. To explain the various causes of behavioral addiction using the available and relevant research.
2. To explain the various consequences of behavioral addiction using the available and relevant research.

Sample

In order to get a comprehensive understanding about the causes and consequences of behavioral addiction, the present study has reviewed 31 researches from various reputed journals. The databases like Sage Publication, PubMed, Shodhganga and Research gate were explored for relevant literature catering to our inclusion and exclusion criteria.

Inclusion Criteria

- The studies from 2011 to 2023 were only analyzed in this present study.
- Only research on behavioral addiction is included.

Exclusion Criteria

Any study before 2011 were not included.

Special emphasis was given on including studies that focused on causes and consequences of various forms of behavioral addictions only i.e. studies pertaining to substance abuse or substance related addiction were not included.

General Characteristics of the included studies

The present research focuses on Internet Addiction, Sexual /Pornography Addiction, Gambling and Video game addiction. The research were taken from various database of Sage Publication, Shodhganga, PubMed and Researchgate

Research Design

The present study is a systematic review where more than 31 research studies were referred to get an in-depth understanding of the various etiology behavioral addictions. In addition to the causal factors, emphasis was put on understanding the consequences of behavioral addiction. The research was completed in a time of 2.5 months and interpretation of the research studies were made to understand the objective of the present study.

Data Analysis

The studies included in the present research were compared to analyze the common underlying causal factors and consequences of behavioral addiction. Each study was compared against the other studies and common factors were sought for a concrete conclusion. When it comes to consequences of behavioral addiction, each study was studied in depth to explain the same.

Overview of the Result of the Included Studies

Miezah. D, et al (2024) conducted a study on impulsivity and it's relationship with social media addiction, internet addiction, smartphones addiction which concluded that behavior addiction cause significant functional impaired or distress that can be explained by underlying illness also people who have experienced childhood trauma, abuse or neglect also family history of addiction are more likely to develop an addiction.

Mohammad. S, et al (2023) conducted a study on symptoms, mechanisms and treatment of Video game addiction. The study asserts that addiction to video games and online gaming leads to certain changes in the brain circuits that are similar to that of substance abuse and gambling. Further states that it has a significant relationship with depression and other psycho-social problems.

A study was conducted by Hagfors. H, et.al, (2023) on gambling motives, problem gambling and frustration needs. It was a longitudinal study and was conducted on 1022 participants across three time points. The study concluded that motives to escape and to compete with frustration needs of an individual were the predictors of problematic gambling behaviors. The study further mentioned that higher need frustration when combined with money motive predicted extreme gambling problems.

Tas. N, et al (2023) conducted a study on behavioral addiction with special focus on the smartphone addiction which concluded that the risk factor includes possible addiction in family, unhealthy attitude of parents, dangerous choice of friends, unsuccessful educational background and society's perspective on addiction.

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Benadives. T, et al (2023) conducted the study on potential cause of social media addiction which concluded that the causes are psychopathology - which includes narcissistic traits and obsessive trait. Further the external factors include family discomfort, lack of support, maladaptive cognition, validation impulse, fear of missing out and escape from reality.

Bantarn. F, et al (2023) conducted study on parental attachment, self-control and internet addiction which concluded that the parental detachment, avoidance, self-control and responsibilities are considered to be the central factor for behavior addiction in adolescence.

Kapoor, N. (2023) conducted a study on the type of behavioral addiction. The study focused on the impact and prevalence which concluded that gaming lead to impaired academic and occupational performance, excessive social media linked to feeling of loneliness, depression, anxiety and reduced self-esteem also smartphones addiction leads to decrease in attention span.

A study was conducted by Zhou J, et al (2023) on the relationship between dysfunctional family and problematic gaming behavior. The study explored the bidirectional relation between family dysfunction and adolescent problematic gaming. According to the finding of the study, adolescents usually get entangled between dysfunctional family setting and problematic gaming behavior which gets enforced by the low self-concept clarity. The study concluded that pathological family setup and addiction to gaming have a bidirectional influence.

According to a study by John Donovan (2022) on porn addiction, it was found that chemicals like serotonin and norepinephrine have a clear link with our moods. High level of these chemicals leads to compulsive sexual behavior. It is further stated that once an individual gets addicted it changes the way circuits in our brain works. Along with it easy access to porn via internet and excessive privacy at a young age supports the sustenance of such compulsive behavior.

Abdelrhem. M, et al (2022) conducted a study on causes of addiction on patients where they found that addictive patients were experiencing a great amount of stressful life events, health and legal complications.

Bovas. S (2022) conducted the study on internet addiction and its mental health correlations which concluded that the excessive use of the internet causes numerous psychological dependence and issues like anxiety or depression.

Musetti, A. et al (2022) conducted a study on the addiction behavior of short form video app tiktok the information quality and system quality perspective on 659 Chinese adolescents which has a positive and negative impact where positive includes that they got the platform which is harder to access also gain insight and negative impact on loss of self- control.

According to a study conducted by Akhilesh. J (2021) on study of internet addiction and its association with depression and insomnia on 954 subjects, it was concluded that various factors like gender, time, alcohol, smoking, predicts higher risk of internet addiction. Internet addiction was significantly associated with depression and insomnia.

A study was conducted by Nicolette Edwards (2021) on behaviors underlying gambling addiction. The study was conducted on more than 2116 twins to understand the typology, structure and etiology of gambling behavior. It was concluded from the study that genetics play a significant role in the development and sustenance of gambling disorder.

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Yadav, A. et al (2021) conducted a study on behavioral addiction. According to the study the consequences of behavioral addiction include excessive engagement in behavior, reward effects, functional impairment as well as preoccupation with behavior and withdrawal symptoms.

Gregoire. S, et al (2020) conducted a study on coping strategy and factor related to problematic substance use and behavioral addiction among adolescents and young adults. The researchers collected data by using alcohol use disorder identification test and the smoking behavioral questionnaire which concluded that the main factor related to behavioral addiction was having higher anxiety score and co-morbidity with disease like cancer.

Lim. M, et al (2020) conducted a research on childhood adversity and behavioral addiction. The study concluded that adverse childhood experience were linked to clinical symptoms of gambling, food and social media addiction through the mediator of emotional dysregulation.

Galan. G, et al (2020) conducted a study on social network consumption and addiction in college students during covid 19 pandemic on 14 Spanish University which concluded that social network spread feeling of harassment, jealousy and misunderstanding also negative personal, self-esteem lead to depression and anxiety.

Mandar. P, et al (2020) conducted a study on anger pattern and achievement motivation level of adolescent with reference to internet addiction and sensation seeking behavior. The sample consisted of adolescents from the age group of 16-19 year age group. The study concluded that internet addiction leads to increase in percentage of anger in adolescents and was found to be low on motivation as compared to others.

A study was conducted by George. M, et.al (2019) on psychosocial aspects of pornography. The study concludes that compulsive consumption of pornography can bring about a serious change in the brain. Excessive consumption of porn is associated with psychiatric comorbidities like anxiety, depression and eventually sexual dysfunction. People who are addicted to pornography have lower degrees of integration in the society, conduct problems, and excessive delinquent behavior. It is accompanied with higher depressive symptoms and decreased emotional bonding with caregivers.

Chambertin.S, et al (2019) conducted study on behavior addiction which concluded that certain centrally acting chemicals such as cocaine or amphetamine affect the brain reward system, “reward center” and like dopamine and opioid system.

A study was conducted by Savolainen. I (2018) on addictive behavior and psychological distress among adolescents and emerging adults. The mean age of the participants was between 15 to 25 years. The study was conducted to draw the relationship between excessive gambling, internet overuse and psychological distress. The study found out that all forms of addiction has direct relationship with higher psychological distress.

Zou. Z, et al (2017) conducted a study on substance and non- substance addictions which conclude that behavioral addiction like Internet addiction and Mobile phone addiction are caused by strong desire to use, as well as high level of craving that lead to energy and excitement as well as due to brain neural mechanisms.

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Estevez. A, et al (2017) conducted a study on attachment and emotional regulation in substance addiction and behavioral addiction. It concluded that lack of attachment predicted non substance related addiction (gambling disorder, video game addiction, internet use).

Doornward. S, (2017) conducted a study on the impact of heavy and disordered use of games and social media on adolescent's psychological, social and school functioning which concluded that this can heavily impact the psychological and social functioning of adolescent also have a positive effect in social competencies.

According to a research conducted by Loredana Varveri et.al (2014) on compulsive buying addiction, the way a person feels about his or her life correlates with such compulsive behaviors. This study was conducted on 120 men and it was concluded that depression has an important correlation with problematic behaviors like compulsive shopping.

Ryan. T, et al (2014) conducted a study on the use and abuse of Facebook. The study investigates that Facebook use can become habitual or excessive and some addicts use the site to escape from a negative mood.

Andreassen. C, et al (2014) conducted a study on social networking site addiction. Empirical study suggests that SNS addiction is caused by dispositional factor (personality, self- esteem etc.). The study states that relevant explanatory socio - cultural and behavioral reinforcement factors remain to be empirically explored.

Wang. C (2012) conducted a study on cause of internet addiction which concluded that some biochemical factors in organism would lead to addiction such as cerebral chemical imbalance, imbalance in the neurotransmitter, chromosomal disturbances, personality factor, social support and psychodynamic factor.

Tripodi. M, et al (2012) conducted a study on sexual addiction theory, causes and therapy which concluded that it can cause different social consequences life peer and family isolation, emotional consequences such as loneliness, shame and loss of self-esteem, legal consequences includes job loss and embarrassment.

Villella. C, et al (2011) conducted study on behavioral addiction in adolescence and young adult. This study evaluated the effects of gender and age and assessed the correlation among different behavioral addiction. The study concluded that pathological gambling, exercise addiction were common in boys whereas compulsive buying was more common among young girls.

DISCUSSION

The present study focused on understanding the underlying causes and consequences of behavioral addiction. From the extensive number of researches that has been conducted till date, we can safely conclude that there is no one etiological factor that solely explains behavioral addiction. It is the combination of social, psychological and biological factors along with behavioral patterns as well as personal choices that disposes an individual to develop addiction.

Majority of the studies reveal that *Biological or Genetic Factors* are coming out to be the most significant factor that causes addiction. According to this finding, each person has a unique physiology that disposes a person to develop addiction. Each individual responds differently to

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his or her liking for a particular substance. Similarly, people differ in their ability to resist a compulsive or impulsive behaviors as the responsible brain function differ among individuals. According to the researchers, addiction's power lies in hijacking and even destroying key brain regions that are meant to help an individual survive. A significant component of the circuitry is the nucleus accumbens which is located in the ventral striatum and reception of the dopaminergic innervation from the ventral tegmental area. In addition to dopamine, neurotransmitters like opioids, cannabinoids, serotonin, norepinephrine, glutamate etc. contributes to addiction. This is further supported by a study was conducted by Chambertin. S and Grant. J (2019) on behavior addiction which concluded that certain centrally acting chemicals such as cocaine or amphetamine affect the brain reward system, "reward center" and like dopamine and opioid system. It is further stated that addiction runs in families hence we inherit certain genes that creates the vulnerability for addiction. These findings are supported by the study by John Donovan (2022) on porn addiction. It was found that chemicals like serotonin and norepinephrine have a clear link with our moods. High level of these chemicals leads to compulsive sexual behavior. It is further stated that once an individual gets addicted it changes the way circuits in our brain works. Along with it easy access to porn via internet and excessive privacy at a young age supports the sustenance of such compulsive behavior.

After biological factor, abusive childhood and pathological family setup comes out to be the second significant factors that contribute to addiction. Family is the primary social unit. When we talk about pathological families, we mean that the family functions in a deviated manner from the regular family. According to a study conducted by Mitra Marakovic (2016) there is a strong connection between family relationships and addiction. Research shows that drug addicts usually come from pathological or incomplete families. They also tend to have weaker family ties and experience ill will and hostility. Further adolescents with weak or poor family functioning tend to seek support from Internet thereby fostering impulsive addiction to internet usage. This is attributed to lower ability of the child to communicate and formulate solutions to their problems hence they have to depend on internet usage. Similarly, when we talk about sexual addiction, researchers conclude that when compulsive addiction prevails in the family, an individual becomes pre-disposed to develop sexual addiction. These assertions are found same for gaming addiction as well. A study conducted was conducted by Zhou J (2023) on the relationship between dysfunctional family and problematic gaming behavior. According to the finding of the study, adolescents usually get entangled between dysfunctional family setting and problematic gaming behavior which gets enforced by the low self-concept clarity. The study concluded that pathological family setup and addiction to gaming have a bidirectional influence. Similarly, a study was conducted by Jauregui. P (2017) on attachment and emotional regulation in substance addiction and behavioral addiction. It concluded that lack of attachment predicted non substance related addiction (gambling disorder, video game addiction, internet use).

In addition to Biological factors and dysfunctional family, the present research has found certain other factors that have led to behavioral addiction among individuals. It includes factors like Stress. When an individual is under stress, HPA axis, the involved autonomic nervous system, amygdala and other brain systems responsible for stress related behaviors communicates with brains reward circuit that is responsible for addictive behaviors. This is further supported by a study conducted by Abdelrhem. M (2022) on causes of addiction on patients where they found that addictive patients were experiencing a great amount of stressful life events, health and legal complications. Along with-it certain factors like comorbidity with anxiety, depression, mood effect and gender differences were also concluded to be the possible reasons for behavioral addiction.

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The consequences of behavior addiction are grave and debilitating for an individual and people associated with them. A study was conducted by Miezah. D, et al (2024) conducted a on impulsivity and its relationship with social media addiction, internet addiction, smartphones addiction which concluded that behavior addiction cause significant functional impaired or distress. This is supported by the study of Savolainen. I (2018) which concluded that all forms of addiction have direct relationship with higher psychological distress. Researchers have also concluded that behavioral addictions have a causal relationship with deteriorated mental health of the addict. The general difficulties faced by addicts include difficulty in concentration, sleeping issues, chronic psychological conditions like depression and anxiety. When it comes to addiction to pornography or excessive/ impulsive sexual activity, its physical consequences overweigh all the other aspects. Health consequences of sexual addiction includes sexually transmitted diseases, HIV-AIDS, genital herpes etc. Compulsive sexual thoughts may lead to severe depression and the individual may even develop suicidal ideations. An individual might also have to face low self-esteem, hopelessness and self-hatred. Further, a study by Kapoor, N. (2023) on the type of behavioral addiction that excessive gaming lead to impaired academic and occupational performance, excessive social media linked to feeling of loneliness, depression, anxiety and reduced self-esteem also smartphones addiction leads to decrease in attention span. Research on consequences of video game addiction shows that it leads to changes in certain brain areas like pre-frontal cortex thereby tampering with the normal brain functioning. Game addicts find it difficult to remain emotionally stable and hence remain psychologically withdrawn. Keeping the severity of the consequences of video game addiction, WHO has added video game addiction to ICD -11 and here adolescents are the most vulnerable population.

CONCLUSION

The present research has comprehensively analyzed 31 researches from different database. On the basis of the analyses it can be concluded that *Biology/ Genetics* and *Dysfunctional/Pathological family* are the most prominent factors that leads to behavioral addiction. Consequences of behavioral adduction include *psychological distress, physical tensions and social withdrawal*.

Limitation

The present study was conducted after carefully analyzing the research studies from different reliable sources. Though the study is completed keeping in mind the entire requisite criterion but still few limitations persists. The limitations of the present study are stated below:-

1. The study includes only 4 subtypes of Behavioral Addiction i.e. Internet Addiction, Sexual /Pornography Addiction, Gambling and Video game addiction.
2. The study does not include any comparative analysis.

Future Implication

The future implications of the present study are mentioned below:

1. The comparative analysis between behavioral addiction and substance use addiction can be conducted.
2. Relationship between addiction and any one specific factor can be explored like gender and addiction.

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Conflict of Interest

The author(s) declared no conflict of interest.

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