

Neuropsychological Problems Caused by Substance Dependence on Individuals' Brains

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ABSTRACT: It is a widespread condition today that can cause serious social problems. This addiction causes profound changes in individuals' brain functions, paving the way for the development of neuropsychological disorders. At the root of addiction are functional disorders in areas of the brain such as the limbic structures and prefrontal cortex, which are particularly associated with the reward system. The impact on these regions causes serious disruptions in individuals' cognitive processes, such as impulse control, decision-making, memory, and attention. In addition, chemical imbalances occur under the influence of substances, which can lead to mood disorders such as emotional fluctuations, anxiety, depression, and irritability. These neuropsychological changes negatively affect individuals' daily lives and reinforce the cycle of addiction. The structural and functional changes that occur in the brain reveal that addiction has a deep neurobiological basis. Therefore, neuropsychological assessments and interventions are of great importance in the treatment of substance addiction. Research indicates that changes in the brain's reward circuits and decision-making mechanisms accelerate the progression of the addiction process. Consequently, substance addiction is a multifaceted health issue that must be addressed not only psychologically but also in terms of its neuropsychological dimensions. In this context, understanding the effects of addictive substances on the brain and developing effective intervention strategies play a key role in combating addiction.

KEYWORDS: Brain Functions, neuropsychological disorders, emotional fluctuations, anxiety disorders, mood disorders, addiction cycle

INTRODUCTION

Addiction, a condition that is becoming increasingly prevalent today and can lead to serious social problems, can negatively affect individuals' lives, causing profound and diverse issues. This state of addiction causes significant and lasting changes in individuals' brain functions, creating a foundation for the development of neuropsychological disorders. Among the underlying causes of addiction, dysfunction in critical brain regions such as the limbic structures and prefrontal cortex, which are associated with the reward system, plays a significant role. When these vital and critical regions are affected, serious impairments may develop in individuals' cognitive processes, such as impulse control, decision-making abilities, memory, and attention. While individuals' lives are negatively affected emotionally and psychologically, their social relationships also suffer. For example, the effects of substances that cause addiction can lead to chemical imbalances, which in turn can cause emotional fluctuations, anxiety, depression, irritability, and many other mood disorders. Different types of neuropsychological changes negatively affect individuals' daily lives, contributing to the reinforcement of the addiction cycle. This situation causes addiction to create problems in all areas of life, affecting individuals' social, economic, and health conditions. Extensive research clearly demonstrates that structural and functional changes in the brain are based on a deep neurobiological foundation of addiction. In order for individuals to cope with this process, neuropsychological assessments and intervention processes targeting this process are of utmost importance in the treatment of substance addiction; the effectiveness of these processes must be emphasised. Numerous large-scale studies have shown that alterations in the brain's reward circuits and decision-making mechanisms accelerate the progression of addiction, and therefore this situation must be carefully considered. A systematic examination of addiction can provide a framework that supports individuals' treatment and recovery processes. Consequently, substance addiction has become a multifaceted and complex health issue that must be examined not only in terms of its psychological dimensions but also its neuropsychological aspects. In this context, deeply understanding the effects of addictive substances on the brain and developing effective intervention strategies play a key role in combating addiction. It includes the necessary steps for raising social awareness, and efforts to overcome addiction are of critical importance in enabling individuals to escape this difficult situation and receive the neuropsychological support they need, along

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with psychological support from . Creating awareness in all segments of society, deeply understanding the costs of addiction, and developing preventive approaches are of great importance in increasing the effectiveness of this fight. First and foremost, information about addiction should be shared with the public, and informative work should be carried out on this subject. Therefore, there is a need to draw more attention to the issue of addiction; the widespread sharing of research and findings across society will be one of the critical steps in increasing the effectiveness of the fight against addiction. Educational programmes and social awareness campaigns stand out as an important part of this process. Such initiatives lay the groundwork for an effective fight by involving all components of society in the fight against addiction. Highlighting information and awareness programmes aimed at young people in this process will be a vital step towards preventing addiction in the future. Raising awareness among young people on this issue is of great importance in terms of the impact they have on society and can contribute positively to future strategies for combating addiction. Educators and families should help young people learn the facts about addictive substances and offer empathy and support on this issue. In this way, misconceptions about addiction will be prevented, and a climate of social solidarity will be created. Ultimately, one of the most effective ways to combat addiction is to raise awareness among individuals and create a social support network, which will increase the capacity to cope with addiction and contribute to the goal of creating a healthier society. Combating addiction should not be evaluated solely in terms of individual issues; it must be addressed from a broader social perspective. It should not be forgotten that every individual in the process of combating addiction bears a social responsibility.

METHOD

This study is a literature review based on qualitative research methods. Research methods, Substance addiction can profoundly and negatively affect individuals' lives as a result of the continuous and increasing use of certain substances, i.e., daily or at specific intervals, and over time, it can become uncontrollable, posing a serious and complex problem for society. This type of addiction usually arises due to the extremely negative and harmful effects of frequently used substances on the brain's reward system; this can significantly reduce an individual's quality of life and lead to serious social problems. These substances significantly disrupt the brain's natural reward mechanism, increasing or suppressing the release of neurotransmitters, thereby trapping the individual in a vicious cycle of constantly seeking the pleasure derived from the substance. In the initial stages of the process, many individuals typically begin using these substances to enjoy themselves, have fun, establish social connections, or cope with negative emotions such as stress and anxiety; however, over time, this becomes a habit and leads to a loss of control. Research shows that addiction developing at this stage results in dependency and seriously affects every area of an individual's life. As the process progresses, the individual begins to develop a tolerance to the substance in question as the addiction gradually worsens over time. This tolerance causes the effect of the substance to gradually diminish, leading the individual to feel the urge to use more of the substance, which becomes a vicious cycle and deepens the problem. As a result, individuals gradually lose the capacity to live without the substance and begin to experience great difficulties and distress in coping with the negative effects of addiction. Changes in brain structure cause significant alterations, particularly in the reward system and prefrontal cortex, leading to effects that significantly increase both the psychosocial and neuropsychological impacts of addiction. Hyperactivity in the areas of the brain that control the reward system causes the prefrontal cortex, which manages extremely important mechanisms such as decision-making and willpower control, to lose its functions, thus leading to a loss of impulse control and an increased tendency to take risks. Furthermore, neuropsychological problems directly linked to addiction can pave the way for serious emotional disorders such as anxiety, depression, anger and irritability to emerge in the individual and negatively affect their mental health. In addition, the individual's basic cognitive processes such as attention, memory, learning and decision-making are also seriously and negatively affected. This situation has the potential to profoundly affect the individual's daily functioning, social adjustment, and overall quality of life, and these effects can make it difficult for the individual to participate in social life in the long term. For these reasons, substance addiction is a complex neuropsychological condition that encompasses not only substance use but also all structural and functional changes in the brain, and it is a major issue that must be carefully and thoroughly evaluated. It is clear that neuropsychological assessments must be included in addiction diagnosis and treatment processes, and that this necessitates a more comprehensive, effective, and holistic approach. Addressing this problem from a broad perspective can greatly contribute to individuals' transition to a healthier life; therefore, this field is of critical importance both for the future of individuals and for the health of society, and continuing work in this area is extremely essential and a great necessity. It is also extremely important to raise awareness about this complex issue, develop social sensitivity, and continuously share information on how individuals can protect themselves from the dangers arising from these causes. Educational programmes should be designed to inform the community about combating addiction and to reach individuals in need of support, and policies on this issue should be supported at all levels. When combined with social support and professional help, individuals' determination and resolve to overcome addiction can yield positive results, thereby significantly contributing to an increased capacity to combat problems. At this point, it is important to remember that addiction is not only an individual problem but also a social issue. Therefore, raising awareness at the societal level and taking the necessary measures can effectively support individuals in their struggle with addiction. Consequently, support networks and robust rehabilitation programmes, established through a systematic approach, should be among the most important elements in the fight against addiction. This approach can help individuals rebuild themselves, adapt to society and overcome the effects of addiction, while also improving

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their quality of life. Alongside education and awareness-raising efforts, establishing support groups and creating environments where individuals can come together to share their experiences and bond are significant steps that can have a serious impact in the fight against addiction. This holistic approach not only teaches individuals to quit substances during the treatment process, but also provides a roadmap for developing life skills, learning stress management, and strengthening relationships in social life; thus, it provides the support mechanisms necessary for individuals to reintegrate into society and build a more secure future.

FINDINGS

Data obtained from a literature review Substance addiction is a highly significant issue that manifests in many different ways and has complex effects on brain neuropsychology. In order to understand this complex situation, the various aspects of addiction must be examined in depth and with great care. In this context, it is particularly important to consider changes in the reward system, as impaired dopamine activity is frequently observed in individuals who develop addiction. This impairment seriously affects pleasure and reward processes, ensuring the continuity of addictive behaviours. Thus, individuals' substance dependencies can deepen and become uncontrollable. At the same time, a marked decrease in the functions of the prefrontal cortex is observed in connection with addiction; this brain region plays a critical role in higher cognitive functions such as decision-making, impulse control, and planning. This negatively affects the cognitive processes that enable individuals to make the best choices for themselves, thereby contributing to the addiction process. Such structural and functional changes reinforce the cycle of addiction by making it difficult for the individual to control their thoughts and behaviour. Consequently, treatment may become more difficult. Consequently, changes in brain chemistry negatively affect emotional states, leading to mood disorders such as anxiety, depression, and irritability, which are commonly seen in individuals with addiction. Additionally, neuropathological changes caused by the effects of substances can lead to impaired cognitive functions, causing serious damage to memory and attention span. Such damage to fundamental cognitive processes creates significant difficulties in daily life activities, while the weakening of decision-making ability also becomes a factor that hinders analytical thinking. Brain imaging techniques provide concrete evidence of these changes, offering the opportunity to analyse the negative effects of substances on brain structure and function in greater detail. These neuropsychological foundations constitute an important source of information for the treatment and management of addiction; they play a life-saving role by enabling the development of strategies tailored to the altered brain structure. Therefore, understanding the neuropsychological problems associated with substance addiction is critically important for both clinical practice and preventive studies. Consequently, increasing the necessary attention to this issue is extremely important for public health. Reviewing current treatment approaches can contribute to the emergence of new and effective solutions and enable the more effective implementation of policies developed to combat addiction.

Definition of Substance Addiction

Substance addiction is an extremely complex condition characterised by the repeated and uncontrolled use of certain substances, with individuals exhibiting a constant tendency towards these substances. This type of addiction often seriously negatively affects the individual's quality of life, while also causing significant structural and functional changes in various parts of the brain, leading to a profound impact on the condition. This state of addiction should not be treated merely as a habit; the definition of addiction is also important in terms of how this habit disrupts the individual's psychological and neurological structure, causes loss of control, and negatively affects the individual's basic life functions, thereby putting their overall health at risk. In this complex process, the mechanisms underlying the fact that neurotransmitters in the brain's reward system, particularly dopamine, play a central and important role in the development of addiction must be carefully examined. The excessive stimulation of the reward and pleasure centres in the brain as a result of high-dose substance use creates short-term feelings of pleasure in the individual, but in the long term, this situation may lead to impairments and imbalances in the functioning of these neural regions. Consequently, this situation causes a series of behavioural and neuropsychological problems that make it very difficult for individuals with addiction to control their impulses, experience a loss of motivation and a sense of emptiness, and constantly seek substances. It is important to emphasise that the definition of addiction highlights that it is not merely a habit or dependency, but also a complex brain disorder involving neurological and biochemical changes. In this context, the definition of addiction is a concept that is constantly evolving and being refined within the fields of psychiatry and neuroscience. Research is constantly being conducted on the reasons why people use substances, the difficulties these processes can cause, the consequences, and the effects of these situations. Thanks to this research, a solid reference point is being established for the detection of addictions, the preparation of treatment methods, and the development of preventive strategies. Ultimately, substance addiction is an extremely complex and multidimensional condition, both psychologically and neurologically, which profoundly affects the brain's basic functions and structure, continuing to negatively shape individuals' quality of life while also causing social and personal problems.

Brain Regions and Functions

The fact that different regions and functions of the brain play a critical role in neuropsychological problems associated with substance addiction helps us better understand the complex nature of addiction. Firstly, the limbic system is at the centre of reward and motivation processes; these regions are the most fundamental elements that shape the intense desire for rewarding stimuli and

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addictive behaviours in substance addiction. The most important structures of the limbic system include the nucleus accumbens, hypothalamus, and amygdala. The nucleus accumbens increases the feeling of reward by affecting dopamine release and triggers many behaviours associated with addiction, encouraging individuals to turn to substances. The hypothalamus regulates instinctive motivations and autonomic functions, and also has the function of affecting basic biological needs such as hunger, thirst, and sleep. The amygdala plays a significant role in emotional responses and memory processes ; this can lead to difficulties in emotional regulation after addiction. Such a situation can negatively affect addicted individuals' ability to cope with stress, leading to an increase in psychological problems. Additionally, the prefrontal cortex manages higher-level cognitive functions, including important functions such as decision-making, impulse control, and planning. The effect of substance use on the prefrontal cortex causes a weakening of functions in this region, which can lead to an increase in impulsive behaviour and negatively affect individuals' social relationships in their daily lives. Furthermore, as the hippocampus plays an active role in learning and memory processes, substance dependence can cause structural and functional changes, particularly in the hippocampus and prefrontal cortex regions, which can lead to cognitive impairments. Consequently, these changes can pave the way for neuropsychological problems such as memory issues, attention deficits, and decision-making difficulties, seriously affecting individuals' quality of life. Overall, functional impairments in these brain regions negatively affect individuals' psychological and cognitive abilities, significantly complicating the treatment and management of addiction. Therefore, a thorough understanding of the neuropsychological effects of substance addiction is critically important for the development of appropriate rehabilitation and treatment strategies, highlighting the need for multidisciplinary approaches in treatment processes.

Neuropsychological Effects of Substance Addiction

Substance addiction is an increasingly prevalent problem today, intertwined with numerous social, psychological, and physiological issues, causing complex neuropsychological changes in the brain and posing a significant challenge. The spread of addiction today can stem from a wide variety of factors, including socio-economic status, environmental factors, and personal characteristics of the individual. This addiction causes serious abnormalities in the release of important neurotransmitters that play a key role in brain function, such as dopamine, serotonin, and glutamate. These abnormalities negatively affect the brain's reward and motivation systems, leading to increased uncontrolled substance use and a marked intensification of the excessive desire for these substances. The influence of the social environment not only shapes individuals' behaviours but can also create conditions that lead to the misuse of these resources. Additionally, both structural and functional impairments develop in critical brain regions such as the prefrontal cortex, which is involved in decision-making, impulse control, and social behaviour. These critical neuropsychological changes cause individuals to experience serious impairments in important cognitive areas such as planning, attention, memory, and problem solving, further increasing the difficulty of coping with substance addiction. Furthermore, this situation increases difficulties in emotional regulation from a psychological perspective, paving the way for the emergence of anxiety, depression, and other emotional disorders. Such psychological difficulties observed in individuals entering the addiction process profoundly affect both the individual's personal life and social relationships. Behaviourally, it is known that individuals who enter the addiction process experience a significant increase in aggression, a tendency towards social isolation, and risk-taking behaviour. This situation negatively affects the functionality of individuals in social life, increasing the social problems experienced by both individuals and their environment. Due to the specific effects on the limbic system and frontal areas of the brain, the individual's willpower weakens in a state of addiction, leading to compulsive and uncontrolled behaviours, which can complicate the treatment process. Such neuropsychological changes profoundly affect and complicate recovery from substance addiction and the associated decline in overall quality of life. Therefore, substance addiction is significant not only in terms of its physiological effects but also because of the profound neuropsychological damage it causes, making the development of effective treatment and rehabilitation strategies crucial. In the process of combating addiction, better understanding the difficulties individuals face and developing methods to help them cope with these problems has become an important necessity at both the individual and societal levels. As an inevitable part of this process, raising social awareness and ensuring the accessibility of treatment methods play a vital role in addressing substance addiction. Furthermore, it is extremely important for individuals to understand the addiction process and take an active role in the treatment process. In addition to personal support mechanisms, seeking professional help should be emphasised as an effective and successful part of substance addiction treatment. Therefore, adopting a holistic approach and strengthening social support systems to tackle this important and challenging issue can be considered a critical and essential step in the fight against addiction. In this context, raising social awareness and ensuring cooperation between different organisations in the fight against addiction is one of the roadmaps that should be followed.

Substance addiction can have serious and complex effects on emotional health. As the addiction process progresses, individuals' emotional state may be negatively affected, and disorders such as anxiety, depression and irritability may emerge. This situation causes many negative consequences from a neuropsychological perspective; in particular, the imbalance of neurotransmitters such as serotonin and dopamine causes difficulties in emotional regulation. With the disruption of communication between brain regions, the interaction between the limbic system and the prefrontal cortex, in particular, may be impaired. These areas are directly related to the regulation and control of emotions. While addiction increases dopamine release, desensitisation in this system over time leads

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to malfunctions in the reward mechanism, causing emotional instability. Furthermore, neurochemical changes experienced during substance use can cause abnormal emotional responses, manifesting as emotional numbness, excessive emotional reactions, or sudden outbursts of anger. These disorders damage the social relationships of addicted individuals and negatively affect their daily functioning. Consequently, the neurobiological interactions caused by substances lead to the direct and indirect disruption of emotions, demonstrating that the addiction process causes deep emotional disorders in addition to psychosocial problems.

The Physical Effects of Addiction on the Brain

Substance addiction is a condition that has extremely serious and profound effects on individuals' lives. It causes significant changes that threaten people's mental and physical health and seriously damage the structural and functional integrity of the brain. Over time, these changes significantly reduce individuals' quality of life and make it considerably difficult for them to perform their daily activities and functions. The grey matter shrinkage and connective disorders observed in the brain during the course of addiction can reach alarming levels when taken into consideration. For example, such structural changes are often more pronounced in critical regions such as the prefrontal cortex. The prefrontal cortex plays an extremely important role in decision-making processes, as well as in impulse control and executive functions. On the other hand, structural abnormalities in the limbic system negatively affect the reward and motivation systems of addicted individuals, profoundly and adversely influencing their behaviour and emotional responses. The fact that these physical and chemical changes progress simultaneously with disturbances in the brain's chemical balance is noteworthy as a factor that increases the complexity of addiction. This situation can result in a decrease or imbalance in the levels of neurotransmitters, i.e., the chemicals that facilitate communication between nerve cells. Changes in important neurotransmitters such as dopamine, serotonin, and glutamate become more pronounced as addiction progresses. Consequently, the individual's sensitivity to the reward system is significantly reduced. It becomes inevitable for these pressured individuals to lose the effect of the processes they use as sources of pleasure and motivation in normal life. Consequently, as the effects of these processes take hold, brain function declines considerably, leading to a noticeable deterioration in cognitive functions such as memory, attention, and problem-solving. Individuals' analytical abilities and critical thinking capacities also begin to decline significantly as a result. Furthermore, behavioural disorders and problems with impulse control are directly linked to physical brain changes. This situation makes the treatment process for substance addiction even more complex. The difficulties encountered during treatment are generally greater than those experienced by individuals who do not undergo such structural and physiological changes. Disadvantageous structural and functional changes create significant obstacles in the treatment and rehabilitation processes of addiction; therefore, the brain's return to its former functions after addiction is not always that easy. In addition, these physical effects on the brain associated with substance use are also frequently seen among the underlying causes of behavioural and neuropsychological problems related to addiction. Research on this topic provides an important basis for developing new and effective approach strategies in the treatment of addiction. This contributes significantly to clinical practice, assists individuals with addiction in taking more appropriate steps in their treatment processes, and increases the effectiveness of these treatment processes. Therefore, monitoring research and developments in the field of addiction is of great importance for public health. These new strategies for combating addiction enable treatment processes to be carried out more effectively and efficiently, while also contributing to raising awareness about addiction within society. This can be considered an important step towards creating a healthier society.

The substance addiction treatment process is a truly important issue that requires an extremely complex and multifaceted approach. The various methods and techniques implemented in this treatment process are carefully selected and applied in detail to meet the unique and specific needs of each individual. At this point, psychotherapy plays a critical role and function at the centre of addiction treatment. Psychotherapy is supported by different therapeutic approaches and methods appropriate to the individual's psychological state. Among the various types of psychotherapy, cognitive-behavioural therapy (CBT) stands out as a particularly prominent approach; This form of therapy works intensively to change the addict's negative thought patterns and behaviour patterns, while motivational interviewing techniques are also used as an effective tool to increase the individual's active and effective participation in the treatment process and to strengthen their desire to quit their addiction. Furthermore, family therapy plays an extremely important role in the therapeutic process, contributing significantly to the addict's recovery by strengthening communication and support mechanisms within the family. In addition, medication has become an extremely important and preferred method in substance addiction treatment. Medication-assisted treatment is used to regulate neurotransmitter levels, alleviate withdrawal symptoms, and improve overall mental health. For example, antidepressants, sleep-regulating medications, and certain neurological medications are effectively used in managing neuropsychological issues arising after addiction, and their efficacy has been proven in numerous studies. Furthermore, among alternative treatment methods, various approaches such as animal-assisted therapies, art and music therapies, as well as relaxation techniques like meditation and yoga, hold significant importance. These alternative methods greatly assist in improving the patient's overall quality of life, reducing stress and anxiety levels, and achieving emotional balance. For all these different methods to be applied successfully and effectively, a multidisciplinary approach should be adopted, personalised treatment plans tailored to the individual's specific needs should be carefully prepared, and these plans should also be continuously reviewed. In this way, the aim is to both alleviate neuropsychological problems and resolve addiction in a fundamental

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way. In this context, receiving professional support at every stage of the treatment process plays a very important role in the individual's journey to recovery and increases the effectiveness of the treatment process. The support received at every step of the treatment process will strengthen the individual's motivation and greatly help the process to progress in a healthier manner. This holistic approach is of vital importance in the fight against addiction and forms the cornerstones of a successful treatment process. Taking into account both individual and socio-cultural factors, comprehensively addressing the support provided at every stage of the treatment process increases the effectiveness of the treatment process, offers an effective way to combat addiction, and is extremely important in terms of quickly reintegrating individuals into society. In this way, the aim is to both alleviate neuropsychological problems and resolve addiction in a fundamental way. The various methods and techniques implemented in this treatment process are carefully selected and applied in detail to meet the unique and specific needs of each individual.

CONCLUSION

This study demonstrates that substance addiction is a condition that profoundly affects individuals' lives and can cause significant changes in the brain's complex structure. Therefore, addiction cannot be characterised merely as a habit; it must also be urgently addressed as a major health issue. Functional changes in the brain's reward system cause serious changes in motivation sources, affecting the emotional states of addicted individuals. In addition, the negative impact on cognitive functions and behaviours further complicates the situation. Imbalances in existing neurotransmitters in the brain play a significant role in the development of emotional disorders directly related to addiction, particularly depression and anxiety disorders. At this point, imbalances in dopamine, serotonin, and glutamate levels are of great importance in understanding the dynamics of addiction. Addiction processes cause structural changes in specific areas of the brain. This manifests as marked atrophy observed between the prefrontal cortex and the limbic system. Consequently, maintaining cognitive control and impulse management becomes extremely challenging. This leads to serious cognitive impairments such as attention deficits, memory problems, and difficulties in decision-making. This creates major difficulties in the daily lives of addicted individuals. Furthermore, the neuropsychological reactions triggered during substance use negatively affect individuals' emotional balance and pave the way for various psychological distress, as well as mental health problems such as anxiety and depression. In terms of long-term effects, these changes increase the risk of relapse and lead to resistance to treatment processes. Consequently, this situation complicates addiction treatment processes and may negatively affect the ability to respond to treatment. Fully understanding the chemical and structural effects of addictions on the brain is of critical importance for developing effective and innovative treatment strategies. Therefore, multifaceted and holistic approaches, both clinically and socially, should be adopted to overcome the neuropsychological damage caused by addiction and improve individuals' quality of life. This will enable lasting gains to be achieved in terms of both protecting individuals' health and increasing social welfare. Within this framework, effective and successful intervention methods should be developed to improve the current situation regarding addiction. Research should be conducted on applicable methods and strategies, and these should be implemented. Furthermore, projects that will create lasting effects on public health should be spearheaded. Public health measures related to substance addiction and awareness-raising efforts in this area are extremely important in terms of increasing the community's sensitivity to this health issue. In this context, educational programmes and community-based projects should aim to raise awareness about addiction treatment processes and increase social sensitivity. Adopting a holistic approach in the fight against addiction will be a vital element for long-term success.

LIMITATIONS

This study has some limitations. Firstly, as the research was conducted using a qualitative literature review method, the general validity of the findings is limited and Comprehensive studies on neuropsychological problems associated with substance addiction reveal in detail the structural and functional changes in the brain caused by addiction. Magnetic resonance imaging studies clearly show that individuals who develop addiction exhibit distinct anatomical changes in the prefrontal cortex and limbic system. These brain regions are responsible for fundamental and vital functions such as decision-making, impulse control, and reward processing. Furthermore, disturbances in neurotransmitter levels, particularly a marked decrease in dopamine and serotonin levels, lead to emotional instability and observed declines in cognitive functions. This results in weakened goal-directed thinking and problem-solving abilities, creating negative effects on individuals' daily lives. Various studies have shown that addictive substances have long-term and lasting effects on the brain's reward system, disrupting balance and coordination mechanisms. The results emphasise that addiction is not just a bad habit but is also associated with significant changes in the brain's structure and function. Furthermore, cognitive problems and emotional disorders arising from addiction negatively affect individuals' overall quality of life and play a role in complicating treatment processes.

NOTICE

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