

*Addiction To Digital Drugs:  
Causes And Prevention Methods*

**الإدمان على المخدرات الرقمية: الأسباب وطرق الوقاية منها**

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**ملخص:**

تناولت هذه الدراسة مشكلة اجتماعية حديثة النشأة ناجمة عن سوء استخدام التقنية الرقمية ألا وهي المخدرات الرقمية التي تعتبر من أخطر الظواهر التي أوجدتها الثورة المعلوماتية الحديثة، والتي تسعى من ورائها إلى هدم كيان المجتمع وانعكاس ذلك على استقرار والأمن النفسي للمتعاظمي من خلال مجموعة من الأصوات أو النغمات التي يعتقد أنها قادرة على إحداث تغييرات دماغية، تعمل على تغييب الوعي أو تغييره على نحو مماثل لما تحدثه عملية تعاطي المخدرات الواقعية. كما أنها تمس حياة المتعاظمي النفسية والاجتماعية ويمتد هذا الأثر لأسرته ومجتمعه الذي يعيش فيه، ويمكن أن تلعب المؤسسات التربوية دورا توعويا مهما يقدم بأسلوب علمي مبسط حتى يجد قبولا لدى المتلقي وأسرته والمجتمع ككل.

**الكلمات المفتاحية:**

المخدرات، الإدمان، المخدرات الرقمية، الأسباب، الوقاية.

**Abstract:**

*This study addresses a new social phenomenon that results from the misuse of digital tools—digital drugs. They are brought by the modern information revolution and aim to undermine society and negatively impact the user's psychology. They involve a set of sounds or tones that can cause brain changes and impair consciousness in a manner similar to the effects of real drugs. Digital drugs affect the user's psychological and social life, their family, and community. Therefore, educational institutions should raise youth's awareness about the effect of this phenomenon on their health, their families, and society as a whole.*

**Keywords:**

*Drugs ; addiction ; digital drugs; causes ; Prevention.*

## **1. Introduction**

One of the most dangerous phenomena that threaten today's societies is drugs, as they have corrupted adolescents' minds and bodies. They are a serious problem that has increasingly worsened due to the cultural, economic, and scientific openness brought by globalization and digital technology. Therefore, digital drugs have emerged among youths and easily controlled and destroyed them.

Recently, digital drugs have been an interesting topic in scientific research because multiple factors, such as patterns, tools, and means used for their consumption are intersected, as well as the ones related to the involvement of adolescents in this type of drug. This phenomenon was originated from a technique known as binaural beats, which was discovered by Heinrich Wilhelm Dove in 1839, and it was used in the 1970s to treat mild depression for patients who refused medication and psychotherapy. This technique relied on generating electromagnetic waves that stimulate the release of mood-enhancing substances.

The technique of binaural beats, combined with music, was used in psychiatric hospitals to address the deficiency of mood-activating substances in some patients. It was applied under the supervision of a medical team for only a few seconds and never more than twice a week. However, the use of this treatment technique was eventually discontinued due to its high cost, misuse, and the lack of psychiatric supervision. Thus, the problem of addiction has emerged, as what was once a therapeutic method for some psychiatric patients has now become a form of music addiction that destroys adolescents and leads to many serious physical and psychological problems.

Drug addiction is no longer limited to the consumption of natural or chemical substances. Modern technological advances in all fields, including criminal activity, have given rise to a new form of addiction. Cybercriminal gangs have designed a new type of drug in digital form, known as "digital drugs." Drug traffickers now exploit the internet to promote, sell, and distribute narcotics both domestically and internationally, as well as to provide a seemingly safe place for their consumption. Thus, going to criminal dens to buy or use drugs has become a traditional behaviour, replaced by new digital technologies that have created numerous virtual spaces for drug use with the distinctive features of the internet.

Digital drugs are auditory illusion tones believed to alter brainwave patterns and completely change the state of consciousness, in a way consistent with the biofeedback theory, which explains the processes of addiction and dependency. These digital tones consist of electromagnetic oscillations at two frequency levels, reaching up to 30 hertz. They are usually listened to through headphones and are sometimes accompanied by visual effects. Because these waves are unfamiliar to the brain, they cause instability in neural signal processing and place the user in a state of distortion and disorientation.

Due to the ease of technological use, which requires a high level of digital skill, the number of users has increased. This has driven drug dealers to open online stores, also known as electronic pharmacies. Moreover, the use of traditional drug affects the release rates of neurotransmitters, such as dopamine, serotonin, and norepinephrine, which are essential for vital bodily functions, including coordination, movement, breathing, happiness, hope, forgetting, memory, perception, and balance (Qutidhat, 2022).

Smartphones negatively affect our health due to excessive use and addiction. They lead to unhealthy behaviours, psychological dependence, anxiety, and fear. In the field of mental health, digital drugs have sparked significant controversy because of their impact on individuals' psychological well-being and cognitive functioning (Qutidhat, 2022). At the same time, similar technologies are used in psychological therapeutic interventions to help manage blood pressure, which serves as an early warning indicator of cardiovascular diseases. Such interventions play an important role in promoting healthier lifestyle changes (Kario, Harada & Okura, 2022).

➤ **Research Questions**

This research work seeks to answer the following questions:

- What are digital drugs?
- What are the causes of addiction to them?
- What are the ways to prevent them?

➤ **Significance of the Study**

The current research is significant because it clarifies the meaning of digital drugs, their causes, and effects.

## 2-Definition of Drugs

Linguistically, the word *drug* refers to anything that causes lethargy and noticeable relaxation in the body. It is said that a limb becomes weak and unable to move; likewise, it is said that a person's body, hands, or legs become numb or inactive" (Ibn Manzur, 1993, p. 312). Drugs are all substances extracted from plants, animals or their derivatives, as well as chemical compounds, and alcoholic beverages that affect organisms. They also include prohibited and authorized medicinal drugs. These substances alter a person's mood due to their narcotic properties, harm the brain, and cause damage to their users. They encompass all materials forbidden by divine laws and religions (Dardar, 2001, p. 36).

## 3-Definition of Digital Drugs

Digital drugs refer to a state resulted from excessive auditory stimulation of certain areas of the brain, in a way that contradicts the normal functioning of the ear and leads to addiction. This state is attributed to a desire to repair a distorted self-image, whether ideal or social.

I-Doser is a brand for programs and one of the behavioural forms of methadone addiction. Victims who use the behavioural materials (digital audio files) suffer from negative consequences manifested in a combination of physical, psychological, and social symptoms, such as withdrawal, an intense desire to the addictive digital content, poor self-control and decision-making, unstable relationships, deteriorating social connections, occupational difficulties, and defective behavioural control, which occurs during mental disorder or physical conditions that affect cognitive performance (Blair et al., 2006).

The brain's chemistry becomes imbalanced, leading to convulsions. The individual may experience a form of musical mania, where the auditory stimulation induces irrational mental states as a defence mechanism against perceived distortions of reality. In some cases, these experiences may cause seizures, brain damage, and even dementia as a result of prolonged exposure to such digital auditory content.

Digital drug addiction is defined as a state in which digital technologies such as smartphones, tablets, electronic games, and social media platforms are misused. This leads to the disruption of an individual's social, professional, and physical life (Hamakawa, 2022). Since human ear is responsible for hearing function and maintaining balance, listening to low-frequency tones at high volume levels stimulates its balance system to trigger a response, and then to feel of dizziness. The greater the response, the more intense the dizziness becomes, depending on the

sound frequency, level, and intensity (Atcherson, Warren Kennett, & Nicholson, 2011).

A study conducted by Caterina (2008) showed that digital drugs can cause tremors and convulsions. They can also affect both the individual's psychological and physical states, leading to isolation, mental distraction, and lack of concentration. A treatment specialist (2018) added that the prolonged exposure to binaural sound waves made the brain adapt to these audio files and suffer from headaches, nightmares, and discomfort. Laboratory reports indicate that the influence of these waves on the brain is higher than the natural ones (Alpha, Beta, Theta, Delta). For example, the Theta wave stimulates relaxation processes, while the Beta wave activates concentration and perception. Based on these waves' effects, natural brain resonance occurs, synchronizing the auditory vibrations introduced to both ears simultaneously (Atcherson, Warren Kennett, & Nicholson, 2011).

Therefore, digital drugs are a series of audio files that requires headphones to listen to and leads to hallucinations or alterations in emotional, psychological, and biological states like concentration, meditation, attention, and others. These audio files work by synchronizing sound frequencies with specific brain waves, and listening to them make the individual feel a state similar to that of real narcotics (Jirakittayakorn & Wongsawat, 2015). As sound tones with frequencies between 90–1000 Hz are suitable for auditory resonance, the frequency difference must not exceed 35–40 Hz. Moreover, tones around 500 Hz are effective for the desired auditory experience (Waebeh, Calabrese, & Zwickey, 2007).

#### **4- The Symptoms of Digital Drug Addiction**

- **Cravings:** The individual cannot resist listening to the digital auditory material.
- **Isolation:** When the individual stops or reduces the frequency of listening to the digital materials, they may suffer from nausea, vomiting, diarrhea, muscle pain, and anxiety.
- **Tolerance:** It happens when the individual needs higher doses of musical stimulation that triggers dopamine release or seeks to feel the euphoria (Schmuziger et al., 2012).
- **Impaired Judgment:** The brain dysfunction, which results from distorted neural expectations or mal-adaptation to irregular sound frequencies, leads to weakened cognitive and decision-making abilities. In this context, Lukose (2023) confirmed that pathological behaviours and impulse control disorders are complementary symptoms that help distinguish addiction. He also argued that the

obsession with the addictive substance transmits an individual from addiction to behavioural dependency. Moreover, he explained that this state is a form of hypersensitivity to addiction inhibitors, which leads to compulsive behaviour and obsessive-compulsive tendencies.

- **Social and Occupational Problems:** Digital drug addiction leads to difficulties in making social relationships and doing professional duties, as the individual prioritizes the auditory material, which dominates their interests and attention.

- **Physical Problems:** It negatively affects the individual's body, and causes respiratory issues, heart diseases, infections, convulsions, and epilepsy.

- **Psychological Problems:** It may lead to psychological disorders, such as stress, anxiety, depression, and suicide.

## 5-The Psychological Effect of Digital Drugs

Digital drugs are also called e-dose (Baakek & Debbal, 2001). They lead to several psychological effects, including blackmail, paranoia, guilt, and physical aggression for expressing opinions (Sawah & Chehub, 2022).

Digital music may help individuals release negative emotions, understand the effect of the environment on human perception, and link emotional intelligence with psychological resilience and mental readiness for suggestion. However, it can predispose them to false perception, during which they seek to enhance their performance and modify their brain's foundations (Besson & Friderici, 1998; Moreno, 2009). Moreover, its rhythm may affect emotional stimulation, mood states, self-empathy and criticism (Rodrigues, 2014). The central processing system controls the slow rhythms and manipulates ego through focused listening to the ideal self, or through auditory processing shaped by linguistic and musical stimuli (Slevc, 2012).

Furthermore, music can stimulate defence mechanisms such as projection, rationalization, and daydreaming, through speech processing and precise encoding of emotionally charged situations (Scherer & Zentner, 2001). It focuses on sensory reactions through the features of affective traits and contextual meaning (Moreno, 2009; Scherer & Zentner, 2001). It triggers physiological signs of stress, which are assessed through heart rate and electrical brain activity. Baakek and Debbal (2001) found that the brain's electrical activity related to stress begins with alertness and low performance.

## 6. Types of Digital Drugs

Audio tracks designed to alter brainwave activity and stimulate different mental states are divided into several types:

- **Alpha Waves (7-13 Hz):** They are used to enhance relaxation and reduce stress.
- **Beta Waves (13-30 Hz):** They are used to boost focus and alertness, as they may also increase anxiety at the higher end of the range.
- **Theta Waves (4–7 Hz):** They help in meditation, creativity, and rapid eye movement sleep.
- **Delta Waves (0.5–4 Hz):** According to electroencephalogram (EEG) brain scan results, these waves enhance deep and dreamless sleep and relaxation.
- **Gamma Waves (30 Hz and more):** They are used to enhance cognitive functions and memory, help maintain alertness during awakening, and work through the mechanism described below:

- ✓ **Two tones:** Each ear receives a tone at a slightly different frequency.
- ✓ **Brain processing:** The brain detects the difference between the two frequencies.
- ✓ **Perceived beat:** This difference creates a third tone, known as a binaural beat, which is perceived by the brain.
- ✓ **Brainwave synchronization:** The brain synchronizes its electrical activity to match the frequency of the binaural beat, leading to mental changes .

In this context, many studies were conducted to examine the effectiveness of binaural beats. Some of the findings obtained are presented below:

- **Brainwave synchronization:** Although some studies revealed that binaural beats can synchronize with brainwaves, a systematic review confirmed that the results were inconsistent due to methodological differences (Ingendoh, Posny & Heine, 2023).
- **Pain perception:** Another review suggested that binaural beats may reduce acute pain, but the evidence gained requires extra studies (Shamsi, Azadnia, & Shaygan, 2024).
- **Mood and anxiety:** Studies showed that prolonged exposure to binaural beats can reduce anxiety. However, this evidence still lacks of final decision (Smith, 2019).
- **Placebo effect:** Research indicated that the effect of binaural beats on mood may not be effective than other sounds, suggesting a possible placebo effect.

## 7. Causes of Digital Drugs

### 7.1. Psychological Causes

- **Curiosity, Experimentation, and Peer Influence:** Adolescents often perceive this phase of life as a time for exploration. Thus, they feel curious about new experiences like binaural beats to see if they can alter states of consciousness or relaxation, or adapt to their social group (Loeppky, 2024).

- **Relief of Stress and Anxiety:** Due to the pressures of school, social life, and concerns about the future, many youth suffer from stress, anxiety, and sleep problems. This leads them to use binaural beats to manage these feelings and promote relaxation (Barratt, 2022).

-**Mood Enhancement:** Binaural beats can be used to improve mood or escape from negative emotions, as they can also create feelings of calm or mild euphoria.

-**Seeking Safer Alternatives:** Binaural beats are considered as a safer alternative to drugs since they provide similar effect without legal and health risks.

### 7.2 Social Causes

-**Ease of Access:** The easy accessibility of binaural beats through YouTube and Spotify has increased their popularity, especially for teenagers and youngsters.

-**Cultural Trends:** The rise of digital culture has made practices such as meditation, mindfulness, and alternative therapies widespread. Binaural beats align with this trend and attract those who seek non-traditional way of drug addiction.

-**Media and Technology Influence:** Watching a content about binaural beats through social media, blogs, and videos can spark youth's curiosity and experimentation.

-**Self and Identity Exploration:** The use of binaural beats can be part of exploring adolescent's personality, emotions, and consciousness (Barratt, et al., 2022).

### 7.3. Technological Causes

Teenagers use binaural beats for several technological reasons, including:

-**Social Media Influence:** Social media platforms often feature content about binaural beats, including testimonials and endorsements by influencers. This content can spark interest and encourage experimentation.

-**Personal Devices:** The spread of smartphones, tablets, and headphones allows teenagers to listen to binaural beats at any time.

**-Digital Culture:** As teenagers grow up in a digital age, they tend to find digital solutions for relaxation, focus, and mood enhancement. Binaural beats align with this digital trend.

**-Innovative Applications:** The development of audio technology leads to create high-quality binaural beat tracks, which can be customized for specific effects such as improving sleep, enhancing focus, or promoting relaxation (Anderson, 2022).

**-Integration with Technology:** Many apps and devices are designed to enhance the binaural beats, and offer features such as customizable frequencies, timers, and integration with other tools (Baseanu et al., 2024).

### 8.The Mechanism of Digital Drug Use

Digital drugs create an ideal environment for relaxation, where the users sit in calm, dim lighting, and eyes covered. Then, they use headphones to listen to specific frequencies of music depending on the type of drug. This makes the brain in unstable state. By analysing the brain's electrical signals, the type of euphoria is determined, as each type of digital drug targets a specific brain activity. For example, listening to cocaine frequencies stimulates the brain similarly to physically consuming the drug through sniffing, injection, or chewing (Al-Jubeiri, 2015, p. 02).

As for the steps taken by the user to prepare themselves for a digital drug session, they are as follows:

- Providing a comfortable environment to avoid stress that may affect listening to digital drugs.
- Using stereo headphones that fully cover the ears to block out external noise.
- Preparing a quiet environment, and using good quality stereo headphones so as not to harm the eardrum.
- Undergoing a session that lasts 15 minutes to feel refreshed and attain calmness and mental clarity.
- Afterwards, the user should listen to 30 minutes each day, especially when they have identified their goal and activity, in addition to envisioning the desired state, which leads to positive changes in life.

To build a reinforced response, the user should repeat the process regularly using the following procedures:

- Ear tapping
- White noise
- Relaxation or hypnosis
- Guided imagery techniques

- Breathing techniques
- Humming or toning
- Physical exercise
- Self-motivation training
- Visualizing desired goals to program the subconscious mind (Al-Jubeiri, 2015, pp. 18–19).

## 9. Ways to Prevent Digital Drugs

In order to combat drugs, we should take the following measures:

- Strengthening the youths' religion, as it impacts the individual's soul and guides them to avoid what is forbidden.
- Organizing seminars and study days to build a culture of a drug-free society, and conducting scientific research that highlights the effects of this type of drug.
- Developing electronic programs that prevent and punish the websites that promote digital drugs.
- Involving educational institutions in combating this phenomenon among learners.
- Raising awareness of adolescents about online exploitation through digital drug websites.
- Addressing the problem of school dropout, and encouraging youth to do healthy activities rather than surfing in the virtual world and becoming vulnerable to the digital addiction.
- Encouraging youth to use the Internet responsibly by accessing informative websites.
- Enhancing security cooperation to target digital drug websites, and block them by the anti-cybercrime specialists.
  - Imposing strict laws to combat cybercrime and digital drug promoters (Mahrouk, 2020).

## 10. Tips for Protecting Children from Digital Drugs

- Parents should raise their children's awareness about the dangers of digital drugs and control their behaviours.
- They should check the online audio materials that children listen to.
- Children have to spend their free time in practising sports, reading books, and doing other activities.
- Parents ought to discuss their concerns, listen to them, and suggest solutions to these concerns.

- They must avoid violence and provide children with emotional support.
- They need to develop their children's self-confidence and support them to experience adventures (Wali, 2022).
- Worldwide countries have to cooperate to detect these websites and take the legal actions against them.
- Parents should pay attention to their children, track their online activity, and avoid their excessive internet use by replacing it with sports, reading, and memorizing Quran.
- It is better for parents to monitor children's communication through social media platforms.
- Media institutions, educational bodies, and civil society should cooperate to raise youth's awareness about the risks of digital drugs.
  - Schools, universities, and associations have to apply continuous awareness programs to fight this phenomenon.
- Specialized teams should be formed to handle and combat these websites (Al-Khaldi, 2019).

## **11. Conclusion**

In conclusion, drug consumption has evolved into electronic ways that have the same effect as natural drugs. This phenomenon harms addicts who are usually youth and adolescents, their families, and society as a whole. It negatively affects social and economic development, threatens societal security, and destroys youth's minds and body. Therefore, families can protect their children from drugs by raising their awareness about the dangers of this phenomenon, strengthening their religious values, addressing the problem of school dropout, and encouraging them to practice sports and other activities rather than surfing in the virtual world and being exposed to digital addiction.

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