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DIGITAL DRUG PHENOMENON AND COPING STRATEGIES

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ABSTRACT

A type of drug-like psychotropic substance has recently spread in terms of its effect, different from its nature and its means of dissemination, which is termed a digital drug, which is a type of auditory stimulus that creates psychological and physical effects similar to that of conventional drugs. by broadcasting sound tones at different frequencies per ear through headphones, the brain interacts with the difference between frequencies to generate a new internal frequency. This interference is known as "binary strikes", and is thought to affect patterns of brain activity, causing changes in the state of mind. According to available statistics, the victims of this phenomenon have reached a large and growing number of juveniles and young people, which increases their seriousness and consequences. Although this type of psychotropic substance is very similar to traditional drugs, drug laws cannot absorb this type of substance. On the other hand, the prevalence of this phenomenon is done by means of information technology, but the laws on information crimes fall short of the phenomenon. Despite the seriousness of this phenomenon, it is still outside the scope of criminalization and punishment. The research therefore examined the concept of these effects, their impact mechanism and methods of dissemination, and in light of this, a comprehensive plan was presented to address them based on two methods, the first of which is preventive, based on family awareness and control. The second is the use of criminalization and punishment techniques, taking into account the phenomenon's specificity, nature, means and victims, in the light of contemporary trends in criminal policy in criminalization and punishment, while emphasizing the importance of international cooperation in this regard.

KEYWORDS: Digital Drugs, Reducing Criminalization, Reducing Punishment, Negative Awareness, Binary Waves, Cerebral Oscillations, Binary Waves, Criminalization Determinants, Punishment Determinants, Positive Contribution, Negative Contribution.

1. INTRODUCTION

1.1. The Phenomenon of Digital Drugs and Strategies for Their Mitigation

Throughout its extensive historical progression, humanity has traversed numerous developmental phases, commencing with the epochs of hunting, gathering, and foraging, advancing through pastoralism, then agriculture, and ultimately culminating in the era of manual industry. This trajectory reached its zenith with the Industrial Revolution in the latter half of the 18th century (Circa, 1760). However, the march of progress did not halt at this juncture. The global landscape has since witnessed successive iterations of this revolution, evolving into what is now termed the Fourth Industrial Revolution at the dawn of the new millennium. This era has been marked by profound advancements in information and communication technologies, with artificial intelligence (Al-Feki, 2023) emerging as one of its most pivotal outcomes, heralding the advent of the Digital Revolution.

Indisputably, this protracted and unceasing evolution, particularly within the digital domain, has played an instrumental role in empowering humanity to harness natural resources with unprecedented efficacy, rendering them optimally accessible. Furthermore, it has substantively contributed to the realization of sustainable development goals (Fukuyama, 1993: 24)—a pursuit that has been a cornerstone of human aspiration since antiquity. This progress has engendered positive ramifications across a myriad of social, economic, and cultural dimensions, among others.

Nevertheless, concomitant with these advancements is an insidious dimension of technological misuse, propelled by motives rooted in exploitation, avarice, and rapacity. This misuse has manifested in multifarious forms, including but not limited to: infringements upon privacy, the propagation of disinformation, cyber fraud, the dissemination of hate speech, and, most alarmingly, the emergence of digital intoxication—colloquially termed "digital drugs." This phenomenon has recently proliferated, presenting a formidable challenge and posing a significant threat to entrenched social values and conventions. Notably, empirical data indicates that the primary demographic affected by this phenomenon is the youth.

While liberal democracy is often posited as the apogee of humanity's ideological evolution and the ultimate paradigm of governance, the trajectory of digital technology is boundless and perpetually evolving. With each successive technological breakthrough, novel forms of misuse inevitably emerge, constituting an ongoing threat that portends potentially catastrophic consequences.

Despite the concerted efforts of nations to develop and amend their laws to address the misuse of digital technologies, they have struggled to keep pace with the evolving forms of such misuse, particularly the alarming proliferation of digital drugs in recent years. According to some statistics, there are approximately 200 million individuals addicted to this form of digital substance worldwide (Yassin, 2015: 565).

1.2. Study Significance

In our view, digital drugs are more perilous than traditional narcotics due to their ease of dissemination on one hand, and the difficulty in detecting and prosecuting them on the other. Consequently, this research seeks to propose a comprehensive strategy to counter this dangerous phenomenon by shedding light on the unique characteristics of this type of psychoactive influence. This necessitates a detailed examination of its nature, evolution, methods of distribution, underlying motivations, societal impacts, and mechanisms for mitigation.

1.3. Research Problem

Existing penal legislation encompasses laws that criminalize the cultivation, production, trafficking, provision, and consumption of traditional narcotics and psychoactive substances, as well as laws that penalize cybercrimes. However, the central question arises: Can these laws adequately address the phenomenon of digital drugs? If these laws prove insufficient, what legislative framework could be devised to confront this phenomenon, and what would its key features entail? Furthermore, given the unique nature of this type of psychoactive influence, another pertinent question emerges: Is punitive legal confrontation alone sufficient to counter this phenomenon? What additional methods and tools can be employed to address it, particularly in light of contemporary trends in criminal policy that emphasize the reduction of criminalization and punishment, limiting the use of penal sanctions to the narrowest extent possible?

1.4. Research Methodology

Judgment about a matter is contingent upon its conceptualization, and the nature of any research determines its approach and methodology. Since this study aims to formulate a specific strategy to address

this phenomenon, it necessitates, first and foremost, a clear delineation of the phenomenon's characteristics, definition, evolution, risks, and impacts as a precursor to developing such a strategy. This requires the use of a descriptive methodology to outline the phenomenon's features and conceptual framework, followed by an analytical methodology to examine the current state of penal legislation and its capacity to confront this phenomenon. Additionally, the proposed strategy for addressing the issue must be grounded in the general principles and rules of criminalization and punishment, while taking into account contemporary trends in criminal policy that emphasize the limitation of criminalization and punishment.

1.5. Research Structure

Based on the above, this research will be presented in two main sections:

The First Section will focus on the conceptual framework of digital drugs, aiming to provide a comprehensive understanding of this type of substance in terms of its nature, mechanisms of distribution, and societal impacts. This will contribute to the development of effective measures to counter it. The Second Section will explore strategies for confronting this phenomenon, with the goal of formulating an optimal plan to curb its proliferation.

2. THE CONCEPTUAL FRAMEWORK OF DIGITAL DRUGS

There remains significant debate regarding the effects and implications of digital drugs, which likely stems from differing perceptions of these psychoactive influences. Therefore, the task of defining the technical, scientific, and technological aspects of these substances is of particular importance. Moreover, formulating optimal strategies to counter them can only be achieved through a thorough understanding of these aspects. In this Section, we will attempt to shed light on the key dimensions related to their definition, mechanisms of influence, methods of distribution, and the potential victims of these substances. This will be addressed in the following Sections:

1. The Concept of Digital Drugs and How They Affect the Brain.
2. Methods of Promoting Digital Drugs and Their Victims.
3. The Concept of Digital Drugs and How They Affect the Brain

Numerous studies have attempted to define the concept of digital drugs and establish precise definitions to distinguish them from related phenomena, as well as to explain how they psychologically affect their victims. However, despite their importance, these studies have not reached conclusive results due to ongoing disagreements about the nature and effects of this phenomenon. We will briefly address these issues to the extent necessary for developing effective countermeasures, through the following two Paragraphs:

2.1. The Concept of Digital Drugs

Digital drugs refer to a form of auditory stimulation commonly known as binaural beats, where two tones of slightly different frequencies are presented separately to each ear, resulting in the perception of a third tone created by the brain (Wahbeh, H., Calabrese, C., & Zwickey, H. (2007)..

The brain processes the difference between these frequencies, generating a new internal frequency. This phenomenon is known as "binaural beats," and it is believed to influence brainwave patterns, leading to alterations in mental states.

Digital drugs operate on the principle of brainwave oscillations—electrical signals recorded in the brain that vary according to an individual's mental state, such as focus or relaxation. These oscillations are categorized into five primary types: delta, theta, alpha, beta, and gamma, each associated with specific mental states, such as deep sleep or heightened alertness. Binaural beats are used to stimulate these brainwave patterns through auditory frequencies known as "binaural auditory waves," which modulate brain activity in a manner that may mimic the effects of traditional drugs, such as enhancing focus, inducing relaxation, or eliciting euphoria (Fawzi & Mansouri, 2017: 3).

The term "digital drugs" originates from the notable resemblance between the psychological and cognitive effects attributed to binaural beats and those produced by conventional narcotics. Although these digital stimuli lack the chemical components found in traditional drugs, they operate through neurological and sensory pathways that influence the brain’s activity and alter an individual’s state of consciousness. This resemblance forms the foundation for the term, as both aim to manipulate mental states, whether for recreation, stress relief, or altered perception.

The label "digital drugs" is thus applied because these auditory signals are designed to modulate consciousness, much like traditional substances. They are marketed and consumed to achieve effects such as deep relaxation, heightened creativity, or

even euphoria. This functional similarity—altering perception or mood without physical intake—draws a direct parallel between the two, despite the absence of pharmacological agents in digital formats.

Furthermore, concerns have been raised about the potential for psychological dependence on these digital experiences. While they may not induce physical addiction in the clinical sense, repeated use in pursuit of specific mental effects, such as escape from stress or emotional discomfort, can foster a kind of behavioral or psychological attachment. Just as traditional narcotics stimulate the brain's reward systems, some argue that digital drugs may encourage repeated use by reinforcing pleasurable mental states. In this context, the term "digital drugs" is not only metaphorically appropriate but also indicative of the risks associated with (Al-Jawari, Hassan & Ahmed, 2023: 592).

The term "digital drugs" also derives from their ability to mimic the sensory effects produced by traditional narcotics. Some claim that they can replicate the effects of certain drugs, such as marijuana or cocaine, through varying sound frequencies that influence brain activity. This auditory simulation of traditional drug effects reinforces their association with the term "drugs," despite the absence of a physical narcotic substance being consumed, as is the case with conventional narcotics. The prevailing belief among users about these effects also plays a significant role in solidifying this terminology. Users often feel that the impact they experience while using digital drugs is similar to that produced by traditional narcotics, which has contributed to the widespread adoption of this term in media and preliminary research.

In any case, it can be said that the term was coined to reflect the potential ability of this technology to influence the mind and psychological state in ways like traditional narcotics, despite the differing mechanisms used to achieve these effects. While traditional narcotics rely on chemical substances that directly affect the nervous system, digital drugs depend on sound frequencies that indirectly influence brain activity through a process known as binaural beats.

2.2. Digital Drugs and How They Affect the Brain

Digital drugs, which primarily rely on the technology of binaural beats—scientifically known as "Binaural Beats"—operate based on the interaction between sound frequencies directed to each ear and their effect on brain activity. The core idea behind this technology is the delivery of two different sound frequencies to each ear via headphones. For example, a frequency of 300 Hz might be delivered to the right ear, while a frequency of 310 Hz is delivered to the left ear. The brain automatically processes the difference between these frequencies, which in this case is 10 Hz, and translates it into a type of brainwave known as binaural beats. These binaural beats are believed to influence the patterns of electrical activity in the brain, leading to changes in an individual's mental and cognitive state.

The scientific mechanism behind digital drugs relies on influencing brainwave oscillations, which are electrical signals generated by neurons in the brain and vary according to an individual's mental state. Each type of brainwave is associated with specific mental functions and states. These brainwaves are categorized into several types:

- Delta waves, with frequencies ranging between 0.5 and 4 Hz, are associated with deep sleep and complete physical rest. These waves are stimulated using low sound frequencies, prompting the brain to respond in a manner similar to deep sleep or relaxation.
- Theta waves, with frequencies ranging between 4 and 8 Hz, are linked to deep meditation or drowsiness and are used to induce internal relaxation and reduce stress.
- Alpha waves, with frequencies ranging between 8 and 12 Hz, are associated with a state of calm wakefulness or light meditation and are typically used to enhance creativity and reduce anxiety.
- Beta waves, with frequencies ranging between 12 and 30 Hz, are linked to states of alertness and high concentration. Stimulating these waves is believed to enhance attention and mental activity.
- Finally, gamma waves, with frequencies exceeding 30 Hz, are associated with complex information processing and heightened awareness (Lucid, 2016; Sleep Foundation, 2023)

Therefore, the psychological effects resulting from the use of digital drugs largely depend on the frequencies used for neural stimulation. Psychological effects refer to the mental and emotional changes that occur in response to internal or external stimuli, which may impact cognitive functions, emotional regulation, behavior, and overall psychological well-being (American Psychological Association). By selecting specific frequencies, the brain can be guided into states of relaxation, alertness, or even euphoria. For example, if the difference between the two frequencies used

generates theta waves, the expected effect would be a sense of relaxation or entering a meditative-like mental state. If the difference equals 12 Hz, it mimics beta waves, which are associated with increased focus and attention. It is also believed that specific frequencies, such as those stimulating gamma waves, may enhance cognitive perception and promote complex thinking..

Studies on digital drugs suggest that their impact on mental activity may be real, as the use of binaural beats leads to the synchronization of the brain's electrical patterns with external sound frequencies—a phenomenon known as "Brainwave Entrainment." Numerous scientific experiments have demonstrated notable synchronization in brain activity when listening to these waves, particularly in frequencies associated with theta and beta waves, influencing psychological states such as improved relaxation or enhanced alertness.

However, the effects of these waves remain highly debated. Some studies indicate that the effects may be illusory or a result of user expectations rather than direct changes in brain activity. This has been supported by other studies, such as those published in PLOS ONE, which concluded that some results related to the effects of binaural beats could be explained by the placebo effect (PLOS ONE, 2023; ScienceDaily, 2020). These studies suggest that the evidence supporting brainwave entrainment is not always robust, meaning that the psychological and mental effects of digital drugs are not conclusive and require further research to determine their actual efficacy.

On the other hand, some studies suggest that binaural beats may induce changes in brain activity. At the same time, digital drugs rely on stimulating the production of specific neurotransmitters, such as serotonin and dopamine, which play a crucial role in regulating mood and feelings of happiness. When specific brainwaves are stimulated, these neurotransmitters are released, enhancing feelings of psychological comfort, happiness, and even euphoria. This is somewhat similar to the effects of traditional narcotics, which directly influence the brain's pleasure centres. However, the difference lies in the means used to achieve these effects.

Although digital drugs do not contain any harmful chemical substances or cause physical toxicity, their psychological effects may be particularly noticeable among individuals who use this technology over extended periods. Some reports suggest that repeated use of digital drugs may lead to a form of psychological dependence, especially when users frequently resort to this experience to achieve desired effects, whether to enhance focus or to escape stress and psychological pressures. Nevertheless, there is no strong evidence indicating harmful physical effects resulting from the use of digital drugs, as the effects appear to remain confined to the psychological and neurological realms.

This is because the mechanism by which digital drugs operate is based on the principle of "sound frequencies" and their impact on the brain. The brain constantly attempts to adapt itself to external frequencies, and this process, despite its simplicity, can induce tangible changes in how the brain processes sensory information. This leads to effects similar to those produced by traditional narcotics but without the physical consequences associated with chemical substance use. As interest in this field grows, research is expected to continue exploring the effects of digital drugs on the brain, with a focus on their potential benefits and associated risks.

2.3. Methods of Promoting Digital Drugs and Their Victims

One of the most distinctive features of digital drugs is the ease of their dissemination and accessibility, through platforms that are almost universally available, such as computers and mobile phones. This has led to a rise in the number of victims, particularly among adolescents and young adults. Our discussion will focus on this issue in the following two sections:

1. Methods of Promoting Digital Drugs.
2. Victims of Digital Drugs.
3. Methods of Promoting Digital Drugs

Digital drugs are offered through binaural beats over the internet, typically in the form of audio files accessible via various platforms such as YouTube and Spotify, or through specialized applications and websites. These files are marketed as capable of altering one's mental and psychological state by influencing the brain's electrical activity, wherein different frequencies are directed to each ear, leading to brainwave synchronization. According to a recent study, these audio files—often uploaded in MP3 or WAV format—are meant to be listened to via headphones to achieve the desired effects (Rmit University, 2022; Adams, 2021). Generally, these audio files are categorized into different types or genres based on the intended psychological effect. For instance, some files mimic the effects of sedatives or stimulant drugs such as cocaine or cannabis, while others are designed for relaxation, focus, or even for inducing specific emotional states like happiness or euphoria. They are presented under clear titles that reflect their purported effects, such as "Relaxation

Waves" or "Stimulant Waves," allowing users to select the file that aligns with their psychological or emotional needs.

The presence of digital drugs on the internet is characterized by easy access without requiring the purchase or consumption of chemical substances. Users typically visit dedicated websites or applications, where they may download audio files free of charge or purchase them via online marketplaces. Some of these platforms offer paid content, which includes high-quality audio files or files specially tailored to replicate certain effects with greater precision. In certain instances, these audio files are presented as safe alternatives to conventional drugs, making them appealing to individuals seeking illicit experiences without the legal or health risks associated with traditional drug use.

It appears that the ease of accessing this technology online has contributed to its widespread dissemination and, consequently, increased usage among adolescents and young adults. They can conveniently access these files via their mobile devices or computers through platforms that provide interactive content, where users are encouraged to share personal experiences and rate the effectiveness of these audio waves. These platforms may also feature user communities that offer tips on how to optimize the experience or achieve the best results by employing various listening techniques, such as selecting suitable headphones or creating the ideal listening environment.

In addition to standalone websites and dedicated applications, YouTube is considered one of the most common platforms for distributing digital drugs. The site hosts hundreds of videos featuring binaural-beat recordings under various titles intended to produce specific psychological effects. This content often comprises lengthy audio clips—sometimes spanning hours—presented to users as "audio sessions" focusing on promoting meditation, sleep, or even mental stimulation. These clips can be easily accessed by searching for terms like "binaural beats" or "digital drugs," and they are frequently accompanied by user comments describing personal experiences with these recordings.

Although the internet-based content may appear benign at first glance, legal and ethical concerns remain regarding the effects of these waves on users—particularly younger audiences. The ease of accessing such content, coupled with the lack of stringent legal regulations in many countries, makes it difficult to monitor or restrict its spread.

Moreover, many users may lack a comprehensive understanding of the potential neurological and psychological effects of these sound waves, which highlights the critical need for targeted educational awareness campaigns. Such initiatives should aim to inform the public, especially vulnerable groups, about the possible risks and unintended consequences associated with the use of this emerging technology.

The online presence of digital drugs features a user-friendly, multifaceted format, which facilitates exposure for audiences of various ages. Their widespread availability is driven by users' ability to download or stream audio files, often through platforms that are not fully regulated, thereby fueling ongoing debate over how best to regulate and control this emerging phenomenon.

2.4. Victims of Digital Drugs

Victims of digital drugs are diverse individuals seeking to alter their psychological or mental state through listening to binaural beats. These victims are often from younger demographics, with studies indicating that adolescents and young adults are the group most vulnerable to this phenomenon. The internet provides effortless access to these digital substances without any legal barriers or stringent oversight, making them particularly appealing to youth who desire non-traditional experiences and aim to avoid the legal and health risks posed by conventional drugs.

Adolescents and young adults frequently use binaural beats to achieve changes in their mental or psychological states. Studies show that such users often look for unconventional experiences to escape psychological pressures or attain relaxation, and they can easily access these digital drugs online without legal restrictions. According to the Global Drug Survey 2021, the age group most frequently using this technology ranges from 15 to 30 years, with some individuals viewing it as a safe substitute for conventional drugs (Centre for Health Services Research, 2022).

In one study conducted among a large sample of digital-drug users, approximately 11.7% reported using binaural beats to obtain effects similar to those of traditional drugs, such as cocaine or cannabis (Barratt, Ferris, & Lenton, 2022:3). These users are often young people with a history of drug use or prior experiences with consciousness-altering substances, making them more inclined to try audio files as an alternative or as part of a broader experimental approach.

On the other hand, the victims of digital drugs are not confined solely to adolescents or young adults.

Research indicates that individuals experiencing mental health challenges—such as anxiety, depression, or emotional distress—may be particularly vulnerable to experimenting with this technology as a form of psychological escape. In seeking non-traditional coping mechanisms, some may perceive binaural beats as a convenient and accessible method for temporarily alleviating symptoms. However, persistent dependence on such auditory stimulation, in the absence of appropriate psychological support, may contribute to the deterioration of mental health over time, reinforcing patterns of avoidance rather than promoting genuine recovery.

Furthermore, there is a segment of users who may not be fully aware of the potential risks posed by digital drugs. These users might assume that the experience is completely safe because no chemical substances directly affect the body. Nevertheless, frequent use of this technology can lead to a form of psychological dependence, where users feel compelled to return repeatedly to achieve the desired effects. In some instances, users may exhibit reduced cognitive or social functioning, including diminished concentration, social withdrawal, or a decline in overall mood.

Although digital drugs are not associated with the same direct physical harms as traditional drugs, psychological harm can be significant for specific users. Prolonged use may result in changes to sleep patterns, heightened anxiety and stress levels, or even episodes of hallucinations. This places users at genuine psychological risk, potentially affecting their social interactions and personal or professional relationships.

In summary, victims of digital drugs encompass various user groups who engage with this technology without fully understanding its long-term effects. Adolescents and young adults remain the most at risk, but individuals with mental health issues or those seeking unconventional mental experiences also form a substantial part of the potential victim pool. The psychological risks linked to digital drugs warrant further research and study, particularly given the rising prevalence of these substances among groups most susceptible to non-traditional psychological and mental experiences.

3. MEANS OF CONFRONTING THE DIGITAL DRUGS PHENOMENON

The unique nature of this phenomenon—arising from its non-physical form and its cognitive impact on one hand, and the risks stemming from its easy dissemination, as well as the difficulty of detecting and tracking its contributors on the other—necessitates special methods to address it, characterized by diverse strategies.

Nonetheless, these methods do not differ from traditional methods of countering any negative social phenomenon in terms of their general objective, namely, to eliminate such phenomena or, at the very least, reduce them to the greatest extent possible when total eradication is not feasible. In the context of the digital drugs phenomenon under examination, however, the means of addressing it, according to the researcher, must differ from traditional methods in terms of the mechanisms and tools employed. These can be divided into two approaches: the first is preventive, and the second is repressive.

Means of confronting the digital drugs phenomenon refer to a spectrum of preventive, regulatory, educational, and technological interventions aimed at mitigating the risks posed by the use and spread of digital drugs—audio files (binaural beats) claimed to induce psychoactive-like effects—and protecting vulnerable populations (Fawzi, M. & Mansouri; F., 2017). These include public awareness campaigns, legislative and institutional regulation, monitoring of online platforms, and integration of digital drug-related issues within mental health and addiction treatment services. This multifaceted approach ensures that both the root causes and the technological nature of the threat are effectively addressed through comprehensive and adaptive strategies.. We discuss each in the following sections:

1. Preventive Measures in Confronting the Digital Drugs Phenomenon.
2. Repressive Measures in Confronting the Digital Drugs Phenomenon.
3. Preventive Measures in Confronting the Digital Drugs Phenomenon

Criminological prevention focuses on the array of methods that preclude the commission of crimes by drawing on insights from criminology, which identifies the factors and reasons driving individuals to commit offenses (al-Shadhili, 2009: 24). Crime prevention is a strategy embraced by contemporary criminal policy for confronting criminal phenomena, as it reduces reliance on criminalization and punishment (Jalal, 2005: 239).

Within this framework, preventive measures refer to legislative, administrative, or procedural actions taken by legal and law enforcement institutions to prevent crimes before they occur, reduce risk factors, and enhance public safety. As defined by the United Nations Office on Drugs and Crime, preventive criminal justice strategies aim to address the root

causes of criminal behaviour, reduce opportunities for offending, and strengthen community resilience through legal, educational, and social mechanisms. (UNODC, 2010),

Accordingly, the measures examined here seek to prevent digital drugs from reaching potential victims by applying proactive legal tools, public awareness initiatives, and technological safeguards, thereby mitigating the psychological and social risks posed by such emerging threats.

Investigating how this phenomenon spreads reveals that it primarily occurs online, via social media platforms (such as WhatsApp and Facebook) or specific websites and links. Thus, the most effective preventive method to counter this phenomenon corresponds directly to the same means through which it disseminates.

At the same time, technical measures for preventing digital drugs cannot be separated from the role of the social environment and the media. The following sections address these two types of preventive measures.

4. TECHNICAL MEASURES

These measures are typically employed to address harmful online content, including hate speech, incitement to violence, or content that violates public morality. They include a range of technical measures, which refer to the application of modern technologies and digital tools aimed at detecting, deterring, and preventing criminal activities in the digital space. According to the United Nations Office on Drugs and Crime, technical measures involve "the systematic application of technological solutions and digital practices to assist in preventing crime or mitigating its impact, through monitoring, analysis, and data-driven early intervention. (UNODC, 2021)" These tools may encompass electronic surveillance systems, content filtering algorithms, biometric recognition technologies, big data analytics, artificial intelligence, and cybersecurity protocols—all designed to reduce opportunities for online crimes and enhance early detection of illegal or harmful digital behavior

4.1. First - Filtering and Blocking Software

The use of filtering and blocking software represents one of the most vital technical preventive strategies for safeguarding individuals, particularly children, adolescents, and other vulnerable groups, from harmful online content, including so-called "digital drugs." These programs utilise sophisticated content-filtering algorithms to restrict access to websites and applications that provide audio files or other materials that may be detrimental to users' psychological and emotional well-being.

Such software functions by analyzing web content and digital data in real time, identifying and blocking platforms classified as inappropriate or harmful. According to a study published in Cyberpsychology, Behavior, and Social Networking, "the implementation of filtering programs can significantly reduce young people's exposure to harmful digital content" (Livingstone & Helsper, 2008). Schools, institutions, and families can install these tools to monitor and regulate the digital environments accessible to users.

Furthermore, a report by the United Nations Educational, Scientific and Cultural Organization (UNESCO) emphasizes that "creating a safe digital environment requires collaboration between educational institutions and families, along with using technical tools like filtering and blocking programs" (UNESCO, 2015). This collaborative approach reinforces the role of technology as a preventive instrument and highlights the shared responsibility in mitigating the risks associated with emerging digital threats.

4.1.1. Second - Security Updates

Security updates form an essential component of bolstering cybersecurity and preventing digital threats, including risks associated with "digital drugs." These updates are software modifications issued by developers to address vulnerabilities, fix security flaws, and enhance the protection of systems and data against cyber threats. They are crucial for maintaining the integrity, confidentiality, and availability of digital platforms.

Ensuring that all devices and software remain regularly updated helps close security gaps that malicious content might exploit to breach systems or access sensitive data. In the context of digital drugs, outdated systems may become more vulnerable to unauthorized access or exposure to harmful audio content distributed through unregulated platforms. Research indicates that a significant proportion of cyberattacks target known vulnerabilities in software that has not been adequately updated (Symantec, 2018), emphasizing the importance of timely and consistent implementation of security updates as a preventive strategy in digital risk management.

Additionally, the use of antivirus programs and other cybersecurity tools is crucial for detecting suspicious files and preventing them from causing harm. Such programs provide an additional layer of protection by monitoring unusual activities and analyzing files and software for potential malicious behavior. In line with recommendations from the

National Institute of Standards and Technology (NIST), "regularly updated security software enhances a system's ability to detect threats early and respond effectively" (NIST, 2020).

The Cybersecurity and Infrastructure Security Agency (CISA) emphasizes the importance of enabling automatic updates for software and devices to ensure immediate access to the latest security patches once they become available (CISA, 2021). The agency also emphasises the importance of relying on reputable security solutions and updating them regularly as part of a comprehensive cybersecurity strategy.

By adhering to security updates and employing suitable protective tools, individuals and institutions can mitigate the risk of exposure to harmful content and cyberattacks. This approach helps strengthen the overall safety of the digital environment and safeguard sensitive data and information, thereby offering better protection against threats such as digital drugs and other cyber risks.

4.2. The Social Environment and the Media

4.2.1. First - The Social Environment

Advocates of the social approach to explaining crime argue that the society in which an individual lives plays a major role in determining crime rates . According to Sutherland, who rejects the impact of heredity on criminal behavior, crime is learned through an individual's association with family and peers. In this view, a person is influenced by the dominant values and behaviors of their family, whether or not those values are in conformity with the law (al-Sayyid, 2005: 54). Moreover, the community's diminished sensitivity to crime and its tacit acceptance of it may encourage individuals to become involved in criminal activities. In a similar vein, Tarde highlighted how the social environment shapes and refines an individual's character through imitation (Baytar, 2008: 28).

Accordingly, a person's behavior is determined by the patterns of relationships, culture, ideas, and beliefs that prevail in their social environment.

Despite criticisms leveled against the social theory of criminal behavior—primarily its disregard for biological and hereditary factors—it still provides a robust foundation for explaining the spread of digital drugs. Applying the theory's findings reveals that the extensive use of the internet, especially among adolescents and young adults, combined with misuse, high levels of peer imitation, weak family supervision (whether due to family disintegration or lack of awareness of the dangers of excessive internet usage), and a community's neutrality or permissiveness toward such behaviors are all factors that facilitate the emergence of this phenomenon. Hence, countering these underlying causes involves fostering a general social culture that encourages optimal internet usage while disapproving of behavior that deviates from that norm, thereby creating a model of conduct for digital interactions. It also necessitates strengthening the family's role in effectively monitoring its members to prevent the further spread of the phenomenon.

4.2.2. Second - The Media

Media outlets—visual, print, and audio—have a critical and undeniable role in confronting various forms of misconduct and corruption, particularly serious crimes and high-risk behaviors. Conversely, the media can unintentionally contribute to criminal activity if it is used improperly. For instance, press coverage of ongoing investigations may hinder the investigation process and impede the apprehension of criminals. Likewise, publicizing criminals' stories could entice ill-intentioned individuals seeking fame to commit crimes in pursuit of the spotlight (Baytar, 2008: 140).

In the sphere of television and cinema, some criminologists have observed that uncalculated dramatic portrayals of certain events may deliver suggestive messages that encourage criminal activity—for example, depicting a crime as a just act akin to social struggle, or casting the criminal as a revolutionary champion of lost justice, or as a character who is socially acceptable (Bihnam, 1988: 98).

With regard to digital drugs, media coverage that focuses on websites promoting such content—along with detailed explanations of how to access or use it—can inadvertently provide additional knowledge and skills to those having difficulty finding it. Moreover, such exposure risks creating negative awareness by fueling the curiosity of individuals who were previously unfamiliar with these substances, potentially leading them to seek out digital drugs themselves and fall victim to them. Consequently, in our view, media engagement with this phenomenon must be kept measured and approached with extreme caution, accuracy, and restraint to avoid the harmful effects of overexposure.

4.3. Repressive Measures in Confronting the Digital Drugs Phenomenon

Punitive measures rely on the use of criminal sanctions, including both penalties and preventive measures, to address criminal phenomena. This is the

approach adopted by penal legislation, albeit with varying strategies. In the context of combating digital drugs, we first examine the extent to which existing penal legislation can accommodate this phenomenon within its provisions and provide adequate protection. This will be discussed in Subsection One. Subsequently, we will explore confronting the phenomenon through specialized penal legislation in Subsection Two.

4.3.1. Confrontation Through Existing Penal Legislation

The first consideration in this regard is legislation targeting traditional narcotics, which is present in every legal system worldwide. Both traditional and digital drugs are psychoactive substances in terms of their effects. However, despite their significant similarities in terms of impact, numerous differences between them hinder the ability of existing legislation to address digital drugs effectively. These differences include:

- The Intangible Nature of Digital Drugs: This characteristic prevents the establishment of the presumed element required for the occurrence of most drug-related offenses. Article (1) of the Omani Law on Combating Narcotic Drugs and Psychotropic Substances, issued by Royal Decree No. 17/1999, defines narcotic substances as: "Any natural or synthetic substance included in Schedules (1, 2, 3, 4, 5) of Group One attached to this law." This interpretation has also been affirmed by the rulings of the Supreme Court in the Sultanate of Oman . The Intangible Nature of Digital Drugs makes it difficult to apply such definitions.
- The Disproportionality of Sanctions: The penalties included in traditional drug legislation are inherently severe, potentially reaching the death penalty . However, the danger posed by digital drugs does not compare to that of traditional narcotics. Applying such harsh sanctions to digital drugs would conflict with the principle of proportionality.
- The Principle of Legality in Crimes and Punishments: This principle prohibits analogy in substantive criminal matters. While there is debate regarding permissive rules—those that narrow the scope of criminalization, such as justifications, or the scope of punishment, such as legal excuses—there is consensus regarding incriminating rules (Al-Seifi & Tharwat, 2005: 69–71). Applying the incriminating rules stipulated in traditional drug legislation to digital drugs falls under the second type of incriminating rules, as it expands their scope of application. This, in turn, violates the principle of legality.

Similarly, regarding laws combating cybercrimes, their surface may suggest an ability to address this phenomenon. However, these legislations primarily focus on crimes involving the use of websites for trafficking or promoting narcotics or psychotropic substances, limiting their application to the promotion of physical drugs . Applying these provisions to digital drugs would constitute analogy, thereby violating the principle of legality.

Given these considerations, it becomes evident that addressing this phenomenon requires specialized penal legislation that considers its unique characteristics, nature, methods of dissemination, and effects, as well as contemporary trends in criminal policy regarding criminalization and punishment.

4.4. Confrontation Through Specialized Penal Legislation

The punitive approach to any phenomenon threatening societal stability must adhere to the general principles of criminalization and punishment. Among the most important of these principles are considerations of penal individualization, derived from the nature of the crime and the personality of the perpetrator. These considerations determine the type of sanction—penalty or measure—appropriate to the crime, as well as the minimum and maximum limits of the sanction. Additionally, the principle of proportionality between the gravity of the crime and the severity of the sanction must be respected. Finally, modern criminal policy trends in criminalization and punishment emphasize reducing criminalization and punishment while relying on alternatives to custodial sentences (Jalal, 2005: 241 and beyond).

Applying these principles to the phenomenon under study, we find that punitive confrontation requires the use of sanctions in the form of penalties and measures, as well as the adoption of alternative punishments for certain manifestations of this phenomenon.

4.4.1. First - Determinants of Criminalization

The material element of this phenomenon takes several forms depending on the role of the contributor, which can be categorized into two types:

A- Passive Contribution: This involves the victims

of the phenomenon, namely the users or consumers of digital drugs.

B- Active Contribution: This takes several forms:

1. Production of Digital Drugs: The most dangerous link in this phenomenon, carried out by individuals with advanced expertise in computer and internet technologies. If criminalized, this could be classified as a form of "intellectual crime," which cannot be committed by ordinary individuals.
2. Trafficking of Digital Drugs: Any act of selling or trading these products for financial gain.
3. Promotion of Digital Drugs: This, in turn, takes two forms:

- Immaterial Promotion: This includes advertising, marketing, or spreading a culture of addiction, attempting to convince the public of their benefits, dispelling doubts and fears about them, and undermining values that oppose them.
- Material Promotion: This involves distributing or providing them for free, often conditional on purchasing another product.
- Provision of Digital Drugs: Whether for a fee in internet cafes or private venues, or for free as hospitality or gifts.

4.4.2. Second - Determinants of Sanctions

Legal rules, whether criminal or civil, consist of two components: obligation and sanction (Al-Seifi, 1967: 35). Criminal rules do not differ from other legal rules in terms of obligation, as they involve commands or prohibitions directed at the general public to enforce compliance. Similarly, criminal rules share the same objective as other legal rules: ensuring respect for the legislator's commands and prohibitions, thereby protecting the intended right or interest. However, what distinguishes criminal rules is the nature or type of sanction they entail, which takes two forms:

Penalties: These include physical penalties such as execution, custodial penalties such as imprisonment, and financial penalties such as fines and confiscation.

Preventive Measures: These encompass various forms of preventive actions.

There are established principles governing the use of criminal sanctions, rooted in theories of penology and enshrined in contemporary penal legislation. While both penalties and preventive measures share the common goals of deterrence (both specific and general), rehabilitation, and justice, each has its own nature and method. Preventive measures are inherently therapeutic, aimed at addressing the risk of recidivism or repeated offending (Abu Amer, 1977: 392). In contrast, penalties are fundamentally punitive, aimed at addressing the harm caused by the crime. Thus, preventive measures are future-oriented (addressing the likelihood of new crimes), while penalties are past-oriented.

In addressing the phenomenon of digital drugs, it is necessary to employ criminal sanctions in both their punitive and preventive forms, as well as to utilize alternative measures, in accordance with the following determinants:

A. Determinants of Penalties

In line with the principle of proportionality, penalties are determined in terms of type and duration based on the gravity and harm of the crime, while also considering the use of practical alternative sanctions. Accordingly, the penalties that can provide protection against this phenomenon can be individualized based on the following considerations:

Type of Penalty, Crimes are classified based on several criteria, including the criterion of severity, which is adopted by most legislations . Based on this criterion, crimes are divided into three categories: felonies (the most severe), misdemeanors (moderately severe), and violations (least severe).

Despite the dangers, effects, and ease of dissemination associated with digital drugs, all their forms remain less severe than traditional narcotics. Therefore, they can be classified as moderately severe crimes and addressed with primary and supplementary misdemeanor penalties as prescribed by law . The penalties should be graduated to match the severity of the specific manifestation of the phenomenon, as outlined earlier. For instance:

Consumers or users of digital drugs may be subject to minimal misdemeanor fines, as they are considered victims.

Other forms of the phenomenon, such as production, trafficking, or promotion, may be addressed with misdemeanor penalties, fines, or both. These penalties can be doubled in severity if accompanied by aggravating circumstances, such as targeting minors, operating within educational environments, or being part of organized activities.

B. Determinants of Preventive Measures

The most important preventive measures that can be used to counter this phenomenon include:

- Confiscation: Of devices, equipment, and technologies used in the production, promotion, and distribution of digital drugs.
- Restriction of Access: Prohibiting individuals from visiting venues designated for electronic games and activities, particularly for

consumers of digital drugs.
- Surveillance: Placing users of digital drugs under supervision.
- Closure and Revocation of Licenses: Shutting down or revoking the licenses of venues intended for electronic games and activities that promote or distribute these drugs.

Third - Use of Alternative Sanctions

Due to the shortcomings of the punitive system in achieving the goals of punishment, its high costs, and the problems associated with short-term imprisonment (Jalal, 2005: 299 and beyond), penal legislation began exploring alternatives to custodial sentences for moderately severe crimes as early as the last century. Several alternatives emerged, such as suspended sentences, deferred judgments, community service, daily fines, electronic monitoring, house arrest, and more.

In accordance with the determinants of criminalization and punishment for this phenomenon—which is classified as moderately severe—the penalties prescribed for it, if criminalized, would be short-term. These penalties provide ample scope for alternative sanctions, which can be widely applied, except in cases of repeat offenses or when the crime is accompanied by aggravating circumstances.

In Omani legislation, the lawmaker has endorsed the institution of suspending the execution of sentences in the realm of misdemeanors and minor offenses as an alternative to custodial penalties. Although this alternative may not be entirely adequate, it remains appropriate and can be utilized to address this phenomenon .

Fourth – Procedural Constraints

Digital drugs possess a particular nature in terms of their production, circulation, and promotion, all of which hinge upon complex digital technology and highly advanced skills. This renders the pursuit and apprehension of perpetrators extremely difficult and necessitates the thorough training and preparation of judicial police officers and law enforcement agencies to enable them to investigate and uncover evidence. Such capabilities can only be achieved through a specialized law enforcement body and tailored procedures capable of managing this phenomenon effectively.

Finally, confronting this phenomenon will not be sufficiently effective without international cooperation to combat it through substantive and procedural national laws as well as international agreements that ensure sufficient flexibility and speed in responding to it. Since this phenomenon is transnational, failing to address it within a cooperative framework will create a significant loophole that undermines efforts to combat it.

5. CONCLUSION

In this research, we have endeavored to examine one of the newly emerging and hazardous social phenomena that portend harmful consequences by shedding light on its various dimensions. We aimed to provide an early warning that urges taking action to limit and prevent its spread through a legislative plan we deem appropriate for this purpose.

From this study, we can summarize the findings and recommendations reached by the research as follows.

5.1. Findings

- Digital drugs constitute a newly emerging form of psychoactive substances, resulting from the negative aspects of digital technology.
- Although digital drugs are dangerous, their harmful effects are significantly less than those of conventional drugs.
- Despite the resemblance between digital and conventional drugs, legislation designed to combat conventional drugs cannot encompass digital drugs.
- Digital drugs are produced, disseminated, and promoted via digital technology; however, this does not necessarily classify them as cybercrimes. Consequently, cybercrime legislation does not adequately cover this phenomenon.
- The largest demographic of digital drug victims is minors and adolescents, as confirmed by relevant statistics.
- Employing awareness and media strategies to combat this phenomenon unprofessionally, and without understanding its nature, can have adverse effects. It fosters negative awareness and stimulates curiosity, particularly among youth, potentially leading them to fall prey to it.

5.2. Recommendations

Confronting digital drugs requires:

1. A Preventive Strategy to Halt the Production and Reach of These Drugs:

This strategy is based on two core components. The first is technological, involving the promotion of scientific research and encouraging the development of digital technologies and technical tools aimed at monitoring digital drugs to prevent their

dissemination, intercept their access to potential victims, and eliminate them at their source. The second is social, operating on two levels :At the micro level—within the family unit—this involves implementing awareness programs through family training and rehabilitation initiatives that enable families to play a pivotal role in combating this phenomenon. These programs aim to equip families with the necessary skills to engage effectively with their adolescent children, strengthen familial bonds, foster open communication, and eliminate psychological barriers that lead to isolation and withdrawal. Such isolation often drives adolescents to seek refuge in private, unsupervised virtual spaces and connect with peers who share similar vulnerabilities—conditions that constitute a fertile environment for the temptation and eventual use of digital drugs.

At the macro level—within broader society—schools, civil society organizations, and public institutions are called upon to play a significant role by integrating at-risk age groups into cultural and social activities that promote collective engagement and community service. These efforts aim to prevent social isolation, reduce feelings of marginalization, and enhance young people's sense of purpose and societal value, thereby boosting their self-confidence and protecting them from falling into the trap of such substances.

2. A Special Penal Legislation that considers the unique characteristics of digital drugs, including their intangible nature, methods of production and distribution, those involved in their propagation, and their victims. This legislation should comprehensively address all aspects of the phenomenon and utilize criminal penalties and legal measures—both punitive and preventive—based on appropriate principles of individualized punishment and procedure, including the application of alternative sanctions where suitable.
3. Special Procedural Legal Rules for investigation, prosecution, and adjudication that are based on subject-matter specialization and sufficient technical training for personnel in law enforcement agencies—particularly those in judicial and prosecutorial roles—so they are equipped to deal with this emerging form of crime effectively.
4. Effective International Cooperation in combating this phenomenon, through binding international agreements that outline clear and stringent strategies which states must adopt. This includes intelligence sharing, law enforcement coordination, joint prosecution efforts, and execution of judicial warrants and rulings, to prevent impunity, ensure accountability, and achieve both general and specific deterrence.

- A preventive plan that impedes the production of these substances and prevents their reach to potential victims, consisting of two main components: a technical element and a social element rooted in specialized awareness campaigns.
- A dedicated criminal law that takes into account the intangible nature of digital drugs, their methods of production and promotion, the parties involved, and their victims. This law should comprehensively address all aspects of this phenomenon, employing criminal sanctions in both forms—punishment and corrective measures—and making use of alternative penalties.
- Special procedural rules governing prosecution, investigation, and trial, centered on specialized expertise and sufficient technical training to effectively address this phenomenon.
- Effective international cooperation in combating this phenomenon, notably in the exchange of information, pursuit of offenders, and enforcement of judicial warrants and judgments. Such cooperation will prevent perpetrators from evading justice.

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