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Review

GAMBLING DISORDER AS AN ADDICTIVE DISORDER AND CREATIVE PSYCHOPHARMACOTHERAPY

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SUMMARY

Addiction does not mean "addiction to substances" only. At the core of the definition of substance dependence is the loss of control. Gambling addiction belongs to non-substance / non-chemical addictions or behavioral/behavioral addictions. The concept of behavioral addictions is new and revolutionary in psychiatry. Gambling addiction, formerly pathological or problematic gambling occurs due to loss of control over gambling. There is growing evidence to suggest that behavioral addictions resemble substance addictions in many domains, including phenomenology, tolerance, comorbidity, overlapping genetic contribution, neurobiological mechanisms, and response to treatment. Behavioral addiction has been proposed as a new class in the Diagnostic Statistical Manual Fifth Revision (DSM-5), but the only category included is gambling addiction. The prevalence of gambling disorders in adolescence is very high and for certain disorders (especially related to the use of the Internet) it becomes more pronounced over time. In this paper, we presented a comprehensive overview of gambling disorders from definition, epidemiology, manifestations, comorbidities, assessment, treatment options, and existing forms of treatment. Given the complexity of the approach to the treatment of gamblers, a creative individualized integrative approach is necessary, which is the basis of creative psychopharmacotherapy. Due to the possibility of the emergence of problem gambling and other impulse-control deficits we need to be very careful when commencing a patient on dopamine replacement therapy or therapy with aripiprazole.

Key words: *gambling - non-substantial addictions - behavioral/behavioral addictions - DSM-5 - creative psychopharmacotherapy*

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INTRODUCTION

Behavioral addiction has been a topic of controversial debates during the recent decades. Clinical experiences and researches suggest that behaviors can result in substantial health and social problems, regardless of the specific activity. Growing evidence indicates that extensive, repetitive, and problematic engagement in several activities can share some similarities with substance use disorders (Petry 2016).

In May 2013, Workgroup of the American Psychiatric Association (APA) for the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5), for the first time, added a non-substance addition to the category of addictive disorders to the set of official psychiatric diagnoses. Gambling Disorder was grouped in the section on Substance Use Disorders. In the earlier DSM versions Gambling appeared as "Pathological Gambling" grouped with the impulse control disorders. So, the DSM-5 revision was to change the name and the grouping, as the main effect (O'Brien 2014).

Their proposals documented a new era in the conceptualization of addictions. The workgroup argued that the phrase addictions and related disorders was a more appropriate descriptor than the old terms substance abuse and dependence. They argued that addiction was much more than physiological dependence and that not all people who were dependent on substances were addicts (i.e., cancer patients requiring opiates) (Bećirović & Pajević 2020). The committee took the position that addiction is a disease of the reward system, and gambling activates brain reward structures that reinforce compulsive gambling behaviors. Thus, a behavior that activates the reward system can have the same effect as a drug (O'Brien 2014).

They reminded clinicians that cravings and the illicit and/or ego-dystonic behaviors commonly associated with addictions are more critical to making the diagnosis than mere dependency (Rosenberg & Feder 2014).

The distinction between substance abuse and dependence was ultimately eliminated in the DSM-5 due to the DSM-5 considers abuse and dependence to be on a continuum called "substance use disorders". Also, in diagnosing addiction, dependence is no longer considered as a basic element. The compulsive aspects of drug use and loss of behavioral control in DSM-5 are underlined more than the concept of dependence (Robbins & Clark 2015).

Recent research on gambling has revealed a clinical course similar to that of addictions, and recent brain imaging findings show that cues associated with gambling activate reward structures in the brain much the way addicting PASs do (O'Brien 2014). No habit provides a reward that cannot become excessive, compulsive, and sometimes life-endangering. However, interestingly, not everybody bears the risk of becoming

addicted. The individual becomes addicted when he or she has been deprived of control over a given substance or behavior and develops dependence (Thibaut & Hoehe 2017).

The criteria were modified slightly by the symptom threshold to four or more symptoms that focused on cravings and out-of-control behavior. The workgroup considered other behaviors as potential candidates for inclusion in DSM but maintained the consistent policy of requiring data in the peer-reviewed literature showing evidence for inclusion (O'Brien 2014).

The workgroup noted that the emerging neuroscience supported a unified neurobiological theory of addictions, regardless of the specific addictive substances, substrates, or activities. Behavioral and substance addictions have many similarities in natural history, phenomenology, and adverse consequences. Both have onset in adolescence and young adulthood and higher rates in these age groups than among older adults. Both have natural histories that may exhibit chronic, relapsing patterns, but with many people recovering on their own without formal treatment (so-called "spontaneous" quitting) (Grant et al. 2010).

Behavioral addictions are often preceded by feelings of "tension or arousal before committing the act" and "pleasure, gratification or relief at the time of committing the act". As in substance use disorders, financial and marital problems are common in behavioral addictions. Individuals with behavioral addictions, like those with substance addictions, will frequently commit illegal acts, such as theft, embezzlement (Grant et al. 2010).

This similarity has given rise to the concept of non-substance or behavioral addictions, i.e., syndromes analogous to substance addiction, but with a behavioral focus. It allowed the inclusion of behavioral as well as chemical addictions (Rosenberg & Feder 2014). Due to that, another behavior disorder, excessive Internet gaming, was seriously considered for inclusion because there are over 200 publications on "Internet Addiction." Regardless of the papers, lack of consistent diagnostic criteria, the group finally decided to add "Internet gaming disorder" in section 3 (Appendix) with a description of what future studies would be required to have this disorder later added to the main group (O'Brien 2014).

Other behavior disorders were considered. They include playing video games, using the Internet, engaging in sexual activities, shopping, exercising, eating, or achieving tan to excess. Should excessive and problematic engagement in nonsubstance use behaviors be mental disorders, depend on further scientific research evidence related to diagnostic assessment, clinical course, or treatment. Together, these data provide a comprehensive and timely scientific review of behavioral addictions. They should be valuable for guiding future research, and clinical care, across behavioral addictions (Petry 2016). The workgroup adhered to the policy of not including any disorder that was not supported by multiple studies in peer-reviewed literature (Rosenberg & Feder 2014).

Petry, Zajac & Ginley (2018) analyzed detailed assessment methods and prevalence rates for these conditions and outlined psychiatric comorbidities, demographic and biological risk factors, and promising treatment approaches. They concluded that overall, data were inconclusive, and consistent terminology and methodology are needed to define and evaluate these conditions more fully prior to considering them mental disorders.

GAMBLING DISORDER

Gambling disorder, previously termed pathological gambling, is the first "behavioral addiction" to be included as a non-substance behavioral addiction in the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5; American Psychiatric Association 2013).

However, it was classified from 1980 as an "Impulse Control Disorder Not Otherwise Specified" until the publication of the DSM-5, when due to given considerable overlap between gambling and substance use disorders (Petry et al. 2013), it is now included in the "Substance Use and Related Addictive Disorders" section.

The DSM-5 lists nine criteria, and for a diagnosis, one must endorse at least four of the following:

- spending a lot of time thinking about gambling or where to get money with which to gamble (i.e., "preoccupation"),
- needing to wager with larger amounts (i.e., tolerance),
- repeated unsuccessful attempts to stop or control gambling,
- experiencing withdrawal symptoms such as restlessness or irritability when trying to cease or reduce gambling,
- wagering to escape from problems or to relieve negative moods,
- trying to recoup prior gambling losses (i.e., "chasing"),
- lying to others about one's gambling or trying to cover up the extent of gambling,
- losing relationships or a career or educational opportunity due to gambling, and
- relying on others to relieve a desperate financial situation caused by gambling (i.e., "bailouts").

Although not a diagnosed psychiatric condition, problem gambling is a term used to describe meeting less than the requisite number of DSM criteria for diagnosis.

Two structured clinical interviews can diagnose gambling disorder or classify individuals as problem gamblers, employing these DSM criteria. One is the Alcohol Use Disorder and Associated Disabilities Interview Schedule–DSM-IV Version (AUDASIS) (Grant et al. 2003, Petry et al. 2005), and another is the National Opinion Research Center DSM-IV Screen for Gambling Problems or NODS (Gerstein et al. 1999). The validity of the AUDASIS is well established in multiple samples (Hodgins 2004, Petry 2007). Other briefer screening instruments also exist, but limited information about their psychometric properties is available (Volberg et al. 2011).

Most surveys in the United States and some other countries, including Canada, the United Kingdom, Australia, New Zealand, China, Singapore, Italy, Norway, Sweden, and Switzerland in national samples reveal that gambling disorder impacts between 0.1% and 2% of the population, thus, overall, prevalence rates for gambling disorder in countries throughout the world appear similar to those reported in the United States. A meta-analysis estimated the prevalence rate of gambling disorder to be between 0.8% and 1.8% (Stucki & Rihs-Middel 2007).

Gambling disorder is highly comorbid with other psychiatric conditions, especially substance use disorders. The rates of major depression and dysthymia were approximately three times higher in individuals with gambling disorders than in non-gamblers. The prevalence rates of every anxiety disorder assessed were significantly elevated among those with gambling disorder compared to those without gambling disorder, including generalized anxiety disorder, panic disorder with and without agoraphobia, specific phobias, and social phobia (Petry et al. 2005, Kessler et al. 2008). The gambling disorder was significantly related to nicotine, substance use, mood, and anxiety disorders, despite heterogeneity across studies (Lorains et al. 2011), these data are relatively limited and primarily restricted to adolescents and young adults (Walther et al. 2012, Lee et al. 2013).

Males have an increased risk of gambling problems relative to females. In most industrialized countries, gambling disorder is more common in individuals of racial and ethnic minority backgrounds (Welte et al. 2001), and in Canada as well as the United States the gambling disorder occur much more in Native Americans as well as in Asian Americans (Petry et al. 2003, Wardman et al. 2001) than in others. Also, individuals with lower incomes or education, typical for ethnic minorities, are overrepresented among those with gambling disorders (Welte et al. 2001).

Individuals with gambling disorder showed increased impulsivity, assessed in a variety of manners, compared to controls (van Holst et al. 2010), existing prospective studies demonstrate that impulsivity in childhood can predict the development of gambling problems in adolescence (Pagani et al. 2009, Slutske et al. 2012), similar to the onset of substance use and substance use disorders (Chassin Fora & King 2004, Zucker 2008).

Existing studies have demonstrated some similarities between individuals with gambling and substance use disorders in terms of impaired functioning in brain regions that relate to impulsive decision-making and motivational processes more generally (Sescousse et al. 2010, Asensio et al. 2010). It is unclear to what extent substance use and gambling disorder represent overlapping or distinct frontostriatal dysregulation. To uncover the neurobiology underlying addictive behaviors, future research should employ similar paradigms and tasks across populations to best understand similarities and differences of addictions.

Early studies demonstrated that gambling disorder tends to run in families. The available data on the molecular genetics of gambling disorder are consistent with the comorbidity of gambling and substance use disorders and the neurobiology of impulsivity. Further identification of genes and biological pathways may help characterize biological mechanisms underlying gambling disorder and possibly response to its treatment (Petry 2016a).

Along the same lines, some scholars consider it permissible to play certain games, such as backgammon, cards, dominoes, etc. as long as there is no gambling involved. Other scholars consider such games to be impermissible by virtue of their association with gambling.

The general teaching in Islam is that all money is to be earned - through one's own honest labor and thoughtful effort or knowledge. One cannot rely upon "luck" or chance to gain things that one doesn't deserve to earn. Such schemes only benefit a minority of people, while luring the unsuspecting - often those who can least afford it - to spend great amounts of money on the slim chance of winning more. The practice is deceptive and unlawful in Islam (Huda 2020).

As in substance use disorders, relatively few persons with gambling disorder present for treatment; less than 10% of individuals with gambling disorder have ever sought treatment for it (Slutske 2006). Those who seek services tend to have more severe symptoms or external pressures.

CREATIVE PSYCHOPHARMACOTHERAPY

There is a huge gap between possibilities for achieving high treatment effectiveness and poor results in clinical practice with gamblers. It is possible to achieve a more positive impact and better treatment outcome by individualizing and personalizing treatments more creatively and rationally. Creative psychopharmacotherapy represents the art and practice of the learning

organization in the frame of transdisciplinary holistic, integrative, and personalized psychiatry. It is based on the creative thinking and systemic information processing strategy integrating reason and intuition as well as on the creation of favorable treatment context and creative collaboration with patients and their families (Jakovljević 2010, 2021).

According to Jakovljević (2010), there are some general principles of creative psychopharmacotherapy:

- Creative psychopharmacotherapy is only a cornerstone of holistic and integrating treatment of mental disorders
- Creative psychopharmacotherapy is always highly personalized.
- Creative psychopharmacotherapy is strictly individualized.
- Creative psychopharmacotherapy is psychopathological mechanisms or processes directed, not particular diagnosis oriented practice.
- Creative psychopharmacotherapy is a context-dependent practice.
- Appropriate medications should be applied in every phase of treatment.
- Psychopharmacotherapy must follow the principles of a human rights-based on fairness, respect, equality, dignity, and autonomy (FREDA) approach to health care.
- Building a shared vision of treatment goals with patients and their families is an important component of learning organization and favorable treatment context.
- The risk-benefit evaluation is one of the basic tenets when planning a treatment strategy.
- Achieving as soon as possible a complete remission.
- Careful monitoring over the entire course of treatment.

With available mental health medications, it is possible to achieve a more positive impact and better treatment outcome by individualizing and personalizing treatments more creatively and rationally (Jakovljević 2010).

CREATIVE PSYCHOPHARMACOTHERAPY OF GAMBLING DISORDER

Gambling addicts most often come to treatment when they assess that their situation is hopeless, most often due to high gambling debts, because they have become financially impoverished and have exhausted all other options for repaying debts. They see treatment as the last chance to get out of this hopeless situation, and not to really be cured of gambling addiction, because they usually have no motivation for treatment. In such situations, gambling addicts see a way out in declaring financial bankruptcy. Many gamblers resort to declaring bankruptcy in order to at least temporarily relieve the family of the stresses associated with gambling debts (Đukanović & Knežević-Tasić 2014).

The most common reasons gambling addicts seek psychiatric help, even hospitalization, are depression and suicidal ideation, and/or suicide attempts due to gambling losses that have brought them to the brink of death.

The treatment of gambling disorders is complex, lengthy, and uncertain in terms of final results. Gambling addicts have no insight into their problems and thus no motivation to treat themselves; in this, they are similar to alcoholics. Compared to alcoholics, the situation of gambling addicts is far more difficult, not because of large money debts, but also because they have a number of comorbid psychiatric disorders, which require treatment in order to subsequently approach the treatment of gambling addiction. What discourages medical and other staff who treat addicts in this type of patient is the uncertain outcome and frequent relapses of all of them, although gambling addicts are even more likely to gamble again during and after treatment (relapse) compared to addicts to psychoactive substances, and therapeutic prognosis even more uncertain (Hasanović & Pajević 2018, Tufekčić et al. 2021).

Some studies have found lower rates of addictive disorders among people with stronger religious and/or spiritual engagement (Kendler et al. 1997 according to Clarke et al. 2006). Spiritual factors and religious experiences have also been found to influence recovery from problem gambling, predicting abstinence from gambling and subjective wellbeing (Walsh 2001).

The concept of recovery capital (RC) describes the internal and external resources that individuals draw upon to initiate and sustain the processes of addiction recovery. This concept has been primarily applied to individuals recovering from substance addictions. In his study, Gavriel-Fried (2018) applied the RC concept to individuals with a gambling disorder (GD) to test its associations with the diagnosis and severity of GD and with levels of psychopathology as manifested in depression and anxiety. He found that RC plays an important role in GD severity and diagnosis, as well as in psychopathology. Extending the concept of RC to the area of gambling contributes to the growing body of studies that have found parallels and common denominators between substance addiction and behavioral addictions.

Understanding how factors promoting recovery from gambling disorder operate is important in gambling studies and treatment programs. The recovery experience may involve multiple positive resources and may be hindered by negative experiences or states. Most prior studies have focused on the latter, generating a gap in understanding the role for positive psychology measures in recovery from gambling disorder. The study of Gavriel-Fried, Moretta & Potenza

(2020a) investigated the associations between symptom improvement in gambling disorder and positive resources operationalized as RC (internal and external resources that individuals may draw upon during the recovery process) and intrinsic spirituality. Although anxiety, stressful life events, and depression were found to be negatively associated with gambling disorder symptom improvement, only recovery capital and spirituality remained significant when all variables were entered together in a multiple regression analysis. These findings highlight the positive role of RC and spirituality in the recovery process and suggest treatment providers should integrate a positive psychology approach in gambling disorder treatment programs (Gavriel-Fried et al. 2020a)

Spirituality and stressful life events, during the recovery process, may operate differently across age groups in gambling disorder. Gavriel-Fried, Moretta & Potenza (2020b) found that correlations between recovery capital and spirituality, and recovery capital and stressful life events were more significant in younger than in older adult gamblers.

The finding of Lee et al. (2021) suggests that spirituality's subscales affect two specific addiction problems in different ways. College students' excessive drinking and problem gambling can be prevented by developing and applying an intervention program that strengthens the connectedness of spirituality's subscales.

Some studies have noted reductions in gambling of gamblers treated with CBT, also the Internet CBT condition reduced gambling to a greater extent than the control condition during the study period, but whether these effects were related to the intervention or reflective of participant characteristics could not be determined because no control condition was included (Carlbring et al. 2012). Nevertheless, CBT, especially when delivered by therapists, can be effective in reducing gambling (Petra 2016a).

Several forms of treatment are available for gambling addiction: Gamblers Anonymous (GA), Cognitive Behavioral Therapy (CBT), cognitive, Eye Movements Desensitization and Reprocessing (EMDR), group analysis and brief motivational interventions as well as other methods of self-help. Finally, some possibilities and pharmacotherapies have been evaluated in researches.

Group meetings of Anonymous Gamblers (GA) are the most common treatment option available (there is no such form of treatment in Bosnia and Herzegovina) and can be used alone or in conjunction with other interventions. GA is based on a 12-step approach in Alcoholics Anonymous AA), and the groups are peer-focused and abstinent. Individuals who practice GA in conjunction with treatment provided by mental health professionals perform better than those who receive professional care but do not attend GA meetings Petry 2003), although these improvements may not be the product of participation in GA meetings, because patients who supplement their treatment with professional assistants with GA meetings, may be more motivated to stop overall gambling (Hasanović & Pajević 2018).

Patients can find local groups through online technology. In general, GA is recommended to all patients and they are given a list of local GA group appointments, immediately at the first treatment session. Even for patients who do not come for professional treatment, GA is a valuable resource in case gambling problems recur in the future. Some GA meetings invite family members and friends of gambling addicts to attend "open meetings," acknowledging that the effects of gambling with consequent problems often extend far beyond the identified patient and that the support of these individuals can be integral to patient recovery.

Self-help treatments have the advantage of reducing barriers to treatment, including cost, transportation, child care needs, and stigma. A number of studies have shown that bibliotherapy and self-directed Internet interventions are more effective compared to control groups on the waiting list, in reducing gambling (Labrie et al. 2012). Many gambling addicts may prefer these self-help options as their first treatment option, and for some, this intervention may help reduce gambling successfully.

As with most behavioral addictions, the method of choice is cognitive-behavioral therapy (CBT), because pathological gamblers have a number of wrong cognitive perceptions that the therapist confronts and corrects during the therapeutic process. Cognitive therapy encompasses four therapeutic procedures: "problem education, raising awareness of cognitive errors, critical thinking of irrational attitudes, and cognitive restructuring". It is possible to use other therapeutic procedures, especially family therapy, psychodynamic and supportive therapy, pharmacotherapy, and socio-therapy. Realistically set of therapeutic goals and a good combination of therapeutic methods are needed to achieve that these goals could the chance of successful treatment significantly increases.

CBT that focuses on changing cognition and gambling-related behaviors yields better results than GA-assisted treatment alone (Petry 2005). CBT results in increased engagement and improved outcomes (Petry et al. 2005). A brief CBT intervention of four to six sessions also promises to overcome the problem of pathological gambling in students (Larimer et al. 2012), but further evaluation of this intervention is needed in a broader sample of gamblers seeking treatment.

Cognitive interventions that focus on the maladaptive thought processes involved in gambling are also available. These therapies assume that cognitive distortions around gambling play a key role in the development of gambling disorders and that correcting these beliefs will lead to more logical behavioral choices - ultimately, reducing or abstaining from

gambling. Intervention by Ladoceur et al. (2001) provides weekly sessions until the patient stops gambling, up to a maximum of 20 sessions. The content of one session focuses on recognizing and correcting common cognitive disorders among gamblers. The second therapeutic component is relapse prevention, which involves the identification of high-risk situations for re-gambling and insufficient belief regarding gambling control. Short-term outcomes are improved in patients receiving cognitive therapy compared to control groups on the waiting list (Ladoceur et al. 2001).

Short motivational interventions have also shown promises to reduce gambling, whether performed alone or in combination with therapy with the help of professional helpers or self-help (e.g. workbook). Often, these interventions target people with subclinical diagnoses - those who do not meet the criteria for a gambling disorder but have negative gambling-related consequences. These interventions can also be useful for engaged individuals, who have poor recognition of the problem, in further treatment, or to encourage self-directed change. Session content typically includes personalized feedback, brief tips, an overview of options (e.g., treatment options, changing goals), and building self-efficacy, all realized in an empathic way. A brief motivational telephone intervention combined with a self-help workbook was effective in improving the treatment outcomes of gambling problematic gambling addicts (Hodgins Currie & el-Guebaly 2001). One-off sessions of self-motivational sessions were also effective compared to a control group formed for assessment only (Larimer et al. 2012). Direct comparisons of motivational and CBT approaches suggest that both interventions are equally effective compared to control groups in problem gamblers (Petry 2009, Petry et al. 2009).

Eye Movement Desensitization Reprocessing (EMDR) is a relatively new therapeutic method (Shapiro 1995) that has produced good results for people with post-traumatic stress disorder (PTSD) and other anxiety disorders. EMDR is a clinical treatment method developed to promote adaptive information processing (AIP) in the central nervous system disrupted by trauma experiences. Henry (1996) tested how effective EMDR treatment is to reduce gambling among pathological gamblers. Pathological gamblers have been hypothesized to be adequate candidates for treatment with the EMDR protocol because of the potential existence of unresolved anxiety associated with trauma that may trigger pathological gambling behavior. This study found that among pathological gamblers, EMDR was effective in significantly reducing the mean incidence of gambling activities. In addition, EMDR was significantly more effective in reducing the frequency of gambling than standard psychotherapy. EMDR was more effective among patients who had a history of trauma. The author of this study suggests that these preliminary findings support an etiological model based on anxiety for gambling disorder (Henry 1996). On the other hand, EMDR treatment for pathological gambling should be further investigated, alternative explanations for these results should be considered. In particular, the variability of time in therapy before EMDR in this study may indicate that simple retention in treatment longer and that commitment to change may lead to a successful treatment outcome (Hasanović & Tufekčić 2018).

Ladouceur et al. (2001) found that reductions in gambling were more pronounced in those in the cognitive therapy condition than in those in the wait-list condition. However, expectancy effects may have impacted outcomes, and wait-list control designs preclude examination of long-term efficacy.

Religion, Spirituality and Gambling Disorder

According to Clarke et al. (2006) a very little is known about gambling disorder among people with Jewish, Islamic or Buddhist affiliations, perhaps because these religions have traditions which strongly opposed gambling (Marlatt 2002, Neusner et al. 2000, Rosenthal 1975). However, high levels of gambling involvement on the part of Catholics have been noted in other studies, and Catholic affiliation has emerged as a risk factor for problem gambling (Kallick-Kaufmann 1987, Walker 1992). These findings are consistent with the relatively more permissive view that the Catholic Church has taken towards gambling on the part of its members as well as within society generally (Abbott & Volberg 2000, according to Clarke et al. 2006).

Some indication that spirituality is associated with gambling comes from studies of multiple risk factors of problem gambling. Clarke (2004) found that *amotivation*, which is displayed by a gambler who continues to gamble with no real purpose and with little sense of meaning accounted for a significant, but small (7%) amount of variance in gambling disorder, after controlling for gambling frequency, number of activities, parents' gambling, impulsivity, locus of control, and the motivations for rewards, stimulation, accomplishment, social esteem and tension release. Another study discovered that among other factors, people with gambling disorder indicated that they lacked direction in their lives (Turner et al. 2003, according to Clarke et al. 2006).

Also, Clark et al. (2006) proposed that some connections between religion and spirituality, and gambling behaviors somehow exist, and that the relationship is bi-directional. In other words, in some cases religious affiliation or spirituality might start, reinforce or shape gambling behaviors; alternatively, gambling behaviors might influence religious affiliation or spirituality. First, religion might influence gambling behaviors. Religious affiliation might lead to an

increase in gambling because certain religions sanction or endorse participation in gambling activities. Adhering to some superstitious beliefs, praying to win, performing rituals and wearing religious medallions as lucky charms strengthen habits that encourage belief that one can increase one's chances of winning (Toneatto 1999).

Conversely, religious groups and beliefs give people strengths to recover from problem gambling. The associated social support is helpful to rebuild the family, to regain their trust and to promote a sense of forgiveness. Spirituality might reduce or stop gambling behaviors. It has special healing processes, and the notion of a "higher being" can help individuals stop addictive behaviors and find meaning in life. Secondly, gambling behaviors might influence religious behavior or gambling behaviors spirituality. Gamblers might attend more religious activities and make generous promises to God so that "God will treat me well, and help me win again." Individuals might feel more spiritual as they sense God's presence when they go through wins and losses. Conversely, people with gambling disorder might stop all activities, including religious ones, in favor of gambling. Also, the guilt associated with gambling disorder, lying, cheating and stealing becomes so intense that individuals stop attending religious activities (Clark et al. 2003).

Islam and Gambling Disorder

In Islam gambling (Arabic: *maysir or qimâr*), is absolutely forbidden (Arabic: haram). In its literal meaning, qimar refers to betting and wagering. Technically, it involves taking ownership of some form of wealth by way of a wager. Qimar or gambling includes every game in which the winner receives something (money, goods, etc) from the loser. This game constitutes wagering on very risky outcomes which shari'a outspokenly forbids.

On the other hand, maisir (gamling) is broader in scope than qimar (betting and wagering). Maisir includes all kinds of gambling, that is, it is more than a particular game of chance. Maisir is prohibited by shari'a on the grounds that the agreement between participants is based on immoral inducement provided by entirely wishful hopes in the participants' minds that they will gain by mere chance, with no consideration for the possibility of loss (Anonymous 2021).

According to Islamic law (Arabic: shari'a) gambling is not considered to be a simple game or frivolous pastime. The holy book, Qur'an often condemns gambling and alcohol together in the same verse, recognizing both as a social disease which is addictive and destroys personal and family lives: "They ask you [Muhammad] concerning wine and gambling. Say: 'In them is great sin, and some profit, for men; but the sin is greater than the profit.'… Thus does Allah Make clear to you His Signs, in order that you may consider" (Quran 2:219).

"O you who believe! Intoxicants and gambling, dedication of stone's idols, and divination by arrows, are an abomination of Satan's handwork. Eschew such abomination, that you may prosper" (Quran 5:90).

"Satan's plan is to excite enmity and hatred between you, with intoxicants and gambling, and hinder you from the remembrance of Allah, and from prayer. Will you not then abstain?" (Quran 5:91).

Muslim scholars agree that it is acceptable or even commendable for Muslims to participate in healthy challenges, competitions, and sports. It is forbidden, however, to be involved with any betting, lottery, or other games of chance (Huda 2020).

There is some disagreement about whether raffles should be included in the definition of gambling. The most common and sound opinion is that it depends on the intention. If a person receives a raffle ticket as a "door prize" or side-product of attending an event, without paying additional money or specifically attending in order to "win," then many scholars consider this to be more of a promotional gift and not gambling.

Islamic Approach to Treatment of Gambling Disorder

Islam provides sincere believers with a code of behavior, ethics, and social values, which helps them in tolerating and developing adaptive coping strategies to deal with stressful life events (Hasanović et al. 2021, Hasanović 2021). Islam teaches how to live in harmony with others "Seek the life to come by means of what God granted you, but do not neglect your rightful share in this world. Do good to others as God has done good to you. Do not seek to spread corruption in the land, for God does not love those who do this" (Quran, 28:77).

Islam enforces the family role in believer's life and emphasizes the religious, moral, and ethical values, on the contrary to modern society, which started nowadays to suffer from moral decay leading to broken families with increased divorce rate and number of unwed mothers and single parent families. Drug abuse, gambling, betting and excessive sexual activities are predominant in adolescents and young adults today. These events lead to conflict, loneliness, guilt, loss of self-esteem, which results in manifestation of a variety of pathological disorders (Al-Haj 1987).

Nowadays, there are growing interests in Islamic psychotherapy from Western countries perspectives, which means incorporation of Islamic views of human nature while using different psychotherapeutic strategies and evidence-based treatments to help treating Muslim patients. This therapy includes using of Quranic metaphors, the Sirah/biography of the Prophet Muhammed (peace be upon him) and his traditions (hadith&sunnah), as well as the biographies of the Prophet's companions, with Muslim patients, which will provide detailed instructions for implementing successful therapy (Sabry & Vohra 2013)

Therapist can use cognitions from the Islamic faith and offer it as an alternative explanations to dysfunc-

tional thoughts of gamblers associated with a variety of conditions or disorders (Hamdan 2008). Sufism as the hard core of Islamic practice, regardles the hystorical and geopolitical environment, can have beneficial therapeutic outcomes. Even those scholars who do not agree with the traditional counseling for Muslim clients frequently consider Sufism as the basis of an original counseling model in Islam (Badri 1997, Jafari 1993).

In summary, there is a huge impact of Islamic religion and spirituality within psychiatric clinical practice today. Using Islamic values and beliefs can be beneficial in treatment of Muslims who suffer from gambling disorder, through incorporation of Islamic beliefs that help in psychopharmacological adherence and modification of different psychotherapeutic techniques to suit Muslim patients. Such aspects provide the basis for specific guidelines in working with Muslim mental health clients, as gamblers are.

Psychpharmacological treatments

Only several medications have been tested for treating gambling disorder, although none are approved for this indication. The U.S. Food and Drug Administration has not approved any medication for the treatment of gambling disorder. However, several pharmacotherapies have undergone investigation for treating this disorder. Three broad categories of pharmacotherapies have been tested: opioid antagonists, selective serotonin and norepinephrine/dopamine reuptake inhibitors, and mood stabilizers.

Naltrexone and nalmefene are opioid antagonists, which are drugs that block the effects of endogenous endorphins on the central opiate receptors. Opioid antagonists can also have effects related to inhibiting dopamine release in the nucleus accumbens, a region of the brain involved with reward. Opioid antagonists are typically used to treat substance use disorders, and several studies have evaluated their efficacy for reducing gambling as well (Grant et al. 2006). Grant et al. (2010) found that that dosing of opioid antagonists may be important but they are not well tolerated, especially at higher doses.

Medications used in the treatment of depression have also been applied to treat gambling disorder, but these have generally resulted in mixed or modest effects (Kim et al. 2002) or no effects, (Blanco et al. 2002, Saiz-Ruiz et al. 2005). Thus, there is limited evidence of efficacy for antidepressants in treating gambling disorders.

Mood stabilizers have been evaluated in treating comorbid gambling and bipolar disorder. Hollander et al. (2005) found that lithium reduced gambling symptoms to a greater extent than placebo. These data suggest the potential for mood stabilizers in the treatment of gambling in this dual-diagnosis population. Nevertheless, additional research is needed to better understand the short- and long-term efficacy of pharmacotherapies in the treatment of gambling disorder.

Together, these data, similar to those reported by Petry et al. (2008, 2009), suggest that a single session may be sufficient to reduce gambling in some gamblers. Also, the phenomenon of natural recovery from problem gambling occurs in an estimated 35% of individuals (Slutske 2006), most problem gamblers report are chronic course, with symptom severity fluctuating over time (Hasanović & Pajević 2018). but the content and duration of efficacious brief interventions require further study, along with a better understanding of persons most likely to benefit from minimal intervention approaches.

Furthermore, as noted by Pallesen et al. (2007), the effect sizes of pharmacotherapies appear to be smaller than those associated with psychotherapies. As the field moves forward, greater consensus must be achieved in terms of classifying patients with gambling disorders who participate in research studies and how gambling and related problems are assessed at the time of study initiation and throughout the course of treatment.

More research is needed to evaluate the efficacy and side effects in this population before certain drugs are recommended as a first-line treatment for gambling disorders. However, it is necessary to provide treatment for comorbid conditions (Petry 2005), and such treatment can improve symptoms to the extent that the patient is more fully engaged in the treatment of gambling.

In the last 15 years, dopamine replacement therapy has become a well-known risk factor for developing an impulse control disorder, such as gambling disorder. Another medication, aripiprazole, has been more recently identified as another risk factor. Dopamine replacement therapy and aripiprazole share a dopamine agonist action. Patients treated with aripiprazole seemed to be more severe pathological gamblers than patients in the dopamine replacement therapy. Aripiprazole is a partial D2 receptor agonist, whereas dopamine replacement therapy includes a full D2 receptor agonist (Grall-Bronnec et al. 2016). Also, Etminan et al. (2017) found a positive association between aripiprazole, pramipexole, and ropinirole and impulse control disorders and gambling disorders. Sodhi et al. (2019) in their retrospective cohort study found that there is the risk of pathological gambling and impulse control disorders with dopamine agonists too. The trigger mechanism of gambling disorder development is complex and cannot only be attributed only to the pharmacodynamic effects of dopaminergic drugs. Indeed, individual vulnerability factors and environmental factors need to be considered.

When commencing a patient on aripiprazole the possibility of emergence of problem gambling and other impulse-control deficits should be monitored, even in those with no history of similar behaviors and even on a low dose (Peterson & Forlando 2017).

Because of the high rates of comorbidities and similarities across behavioral addictions, discoveries from gambling research may facilitate efforts in other addictions. If behavioral addictions have a common genetic or neurophysiological process, then effective prevention and intervention efforts may inform multiple disorders. Because research is only emerging in many of these newer conditions, lessons learned can be applied in other contexts to more rapidly advance our understanding of the etiology, treatment, and prevention of behavioral addictions.

CONCLUSIONS

Although the area of behavioral addiction is still evolving, it is still a young area and there are many gaps in what is currently known and what is in clinical practice. Particularly vulnerable are the age groups of late childhood and adolescence when behavioral addictions mostly occur.

Gambling disorder is a series of common problems present among gambling addicts whether seeking treatment or not, including the presence of comorbid disorders, gambling-related cognitive disorders, ambivalence related to gambling abstinence, and difficulty in taking concrete steps to reduce gambling during treatment. Gambling disorders can result in significant negative consequences for patients and their families.

Despite the increasing understanding of the biological underpinnings of gambling disorders over the last few decades, translating these data into improved prevention and treatment strategies is slow.

Religion and spirituality have a dual connection with the gambling disorder, which depends on the religious principles of the religion to which the gambler belongs. Spirituality can be used as a positive resource in the treatment of gambling disorders. Islamic principles allow for a wide range of interventions in creative psychopharmacotherapy of gambling disorders.

There are still no behavioral addiction medications approved by the U.S. Food and Drug Administration. Fortunately, several treatment options are possible, from self-help to brief inventions to intensive therapies. These treatments are effective in reducing gambling problems and provide choices for patients with different needs and concerns. Though the creative psychopharmacotherapy is the best approach in the treatment of this complex clinical psychosocial problem.

We need to be very careful when commencing a patient on dopamine replacement therapy or therapy with aripiprazole due to the possibility of the emergence of problem gambling and other impulse-control deficits. Patients need to be monitored, even in those with no history of similar behaviors and even on low doses.

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Mevludin Hasanović: conception and design of the manuscript, collecting data and literature searches, analyses and interpretation of literature, manuscript preparation and writing the paper; and gave final approval of the version to be submitted.

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References

1. *Al-Haj M: Social change and family processes. London: Westview, 1987*
2. *Anonimus: http://investment-and-finance.net/islamic- finance/questions/what-is-the-difference-between-qimar-and-maisir.html Pristupljeno 01.08.2021*
3. *Abbott MW & Volberg RA: Taking the pulse on gambling and problem gambling in New Zealand: Phase One of the 1999 National Prevalence Survey (Report No 3. of the New Zealand Gaming Survey). Wellington, New Zealand: Department of Internal Affairs, 2000*
4. *American Psychiatric Association: Diagnostic and statistical manual of mental disorders (5th ed.). Washington, DC: American Psychiatric Association, 2013*
5. *Asensio S, Romero MJ, Palau C, Sanchez A, Senabre I, Morales JL et al.: Altered neural response of the appetitive emotional system in cocaine addiction: An fMRI study. Addict Biol 2010; 15:504–516*
6. *Badri MB: The dilemma of the Muslim psychologist. MWH: London Publishers, 1997*
7. *Blanco C, Petkova E, Ibáñez A & Sáiz-Ruiz J: A pilot placebo-controlled study of fluvoxamine for pathological gambling. Ann Clin Psychiatry 2002; 14:9-15. doi:10.1023/a:1015215809770. PMID: 12046642*
8. *Chassin L, Fora DB & King KM: Trajectories of alcohol and drug use and dependence from adolescence to adulthood: the effects of familial alcoholism and personality. J Abnorm Psychol 2004; 113:483-98. doi:10.1037/0021-843X.113.4.483. PMID: 15535782*
9. *Clarke D: Impulsiveness, locus of control, motivation and problem gambling. Journal of Gambling Studies, 2004; 20:319-345*
10. *Clarke D, Tse S, Abbott M, Townsend S, Kingi P & Manaia W: Religion, Spirituality and Associations with*

Problem Gambling. New Zealand Journal of Psychology 2006; 35:77-83

11. *Đukanović B, Knežević-Tasić J: Bihevioralne zavisnosti u Srbiji. Beograd: Ministarstvo omladine i sporta Srbije, 2014*
12. *Etminan M, Sodhi M, Samii A, Procyshyn RM, Guo M & Carleton BC: Risk of Gambling Disorder and Impulse Control Disorder With Aripiprazole, Pramipexole, and Ropinirole: A Pharmacoepidemiologic Study. J Clin Psychopharmacol 2017; 37:102-104. doi: 10.1097/JCP.0000000000000634. PMID: 27930495*
13. *Gavriel-Fried B: The crucial role of recovery capital in individuals with a gambling disorder. J Behav Addict 2018; 7:792-799. doi: 10.1556/2006.7.2018.82. Epub 2018 Sep 28. PMID: 30264601; PMCID: PMC6426400*
14. *Gavriel-Fried B, Moretta T & Potenza MN: Associations between recovery capital, spirituality, and DSM-5 symptom improvement in gambling disorder. Psychol Addict Behav 2020a; 34:209-217. doi: 10.1037/adb0000492. Epub 2019 Jul 25. PMID: 31343199*
15. *Gavriel-Fried B, Moretta T & Potenza MN: Recovery Capital and Symptom Improvement in Gambling Disorder: Correlations with Spirituality and Stressful Life Events in Younger but Not Older Adults. J Gambl Stud. 2020b; 36:1379-1390. doi: 10.1007/s10899-019-09905-5. PMID: 31696352*
16. *Gerstein D, Murphy S, Toce M, Hoffmann J, Palmer A, Johnson R et al.: Gambling Impact and Behavior Study: A Report to the National Gambling Impact Study Commission. Chicago: National Opinion Research Center, 1999*
17. *Grall-Bronnec M, Sauvaget A, Perrouin F, Leboucher J, Etcheverrigaray F, Challet-Bouju G, Gaboriau L, Derkinderen P, Jolliet P & Victorri-Vigneau C: Pathological Gambling Associated With Aripiprazole or Dopamine Replacement Therapy: Do Patients Share the Same Features? A Review. J Clin Psychopharmacol 2016; 36:63-70. doi: 10.1097/JCP.0000000000000444. PMID: 26658263; PMCID: PMC4700874*
18. *Grant BF, Dawson DA, Stinson FS, Chou PS, Kay W & Pickering R: The Alcohol Use Disorder and Associated Disabilities Interview Schedule-IV (AUDADIS-IV): reliability of alcohol consumption, tobacco use, family history of depression and psychiatric diagnostic modules in a general population sample. Drug Alcohol Depend 2003; 71:7-16. doi: 10.1016/s0376-8716(03)00070-x. PMID: 12821201*
19. *Grant JE, Potenza MN, Hollander E, Cunningham-Williams R, Nurminen T, Smits G & Kallio A: Multicenter investigation of the opioid antagonist nalmefene in the treatment of pathological gambling. Am J Psychiatry 2006; 163:303-12. doi: 10.1176/appi.ajp.163.2.303. PMID: 16449486*
20. *Grant JE, Odlaug BL, Potenza MN, Hollander E & Kim SW: Nalmefene in the treatment of pathological gambling: multicentre, double-blind, placebo-controlled study. Br J Psychiatry 2010; 197:330-1. doi:10.1192/bjp.bp.110.078105. Erratum in: Br J Psychiatry 2011; 198:75. PMID: 20884959*
21. *Grant JE, Potenza MN, Weinstein A & Gorelick DA: Introduction to behavioral addictions. Am J Drug Alcohol Abuse 2010; 36:233-41. doi: 10.3109/00952990.2010.491884. PMID:20560821; PMCID: PMC3164585*
22. *Hamdan A: Cognitive Restructuring: An Islamic Perspective. J Muslim Ment Health 2008; 3:99–116*
23. *Hasanović M & Pajević I: Poremećaj kockanja – šta danas o tome znamo. Novi Muallim – časopis za odgoj i obrazovanje 2018; 19:7-18*
24. *Hasanović M & Tufekčić A: Prikaz primjene EMDR terapije u tretmanu patološkog kockara. U: Hasanović M. (Ur.) EMDR od edukacije preko supervizije do akreditacije u Bosni i Hercegovini. Zbornik radova Druge EMDR konferencije u Bosni i Hercegovini. Sarajevo 24.-25, novembar/studeni 2018. Tuzla: OFF SET i Udruženje/ Udruga EMDR terapeuta u Bosni i Hercegovini 2018; 2:242-255. ISSN 2566.3454*
25. *Hasanović M, Pajević I & Hasanović M: Islamic approach to the psychotrauma: animation, growth and transformation. Psychiatr Danub 2021; 33(Suppl 4):S870-881*
26. *Hasanović M: "A good/beautiful word like a good/beautiful tree..." from the perspective of creative psychopharmacotherapy. Psychiatr Danub 2021; 33(Suppl 4):S1065-1080*
27. *Henry SL: Pathological gambling: Etiologic considerations and treatment efficacy of eye movement desensitization/reprocessing. J Gambl Stud 1996; 12:395-405. doi:10.1007/BF01539184. PMID:24234158*
28. *Hodgins DC, Currie SR, el-Guebaly N: Motivational enhancement and self-help treatments for problem gambling. J Consult Clin Psychol 2001; 69:50-7. doi: 10.1037//0022-006x.69.1.50. PMID: 11302277*
29. *Hodgins DC: Using the NORC DSM Screen for Gambling Problems as an outcome measure for pathological gambling: psychometric evaluation. Addict Behav 2004; 29:1685-90. doi: 10.1016/j.addbeh.2004.03.017. PMID: 15451138*
30. *Hollander E, Pallanti S, Allen A, Sood E & Baldini Rossi N: Does sustained-release lithium reduce impulsive gambling and affective instability versus placebo in pathological gamblers with bipolar spectrum disorders? Am J Psychiatry 2005; 162:137-45. doi: 10.1176/appi.ajp.162.1.137. PMID: 15625212*
31. *Huda: "The Quran and Gambling." Learn Religions, Oct. 29, 2020, learnreligions.com/what-does-the-quran-say-about-gambling-2004114*
32. *Jafari MF: Counseling values and objectives: A comparison of Western and Islamic perspectives. Am J Islam Soc Sci 1993;10:326–39*
33. *Jakovljević M: The creative psychopharmacotherapy and personalized medicine: The art & practice of the learning organization. Psychiatr Danub 2010; 22:309-12. PMID: 20562771*
34. *Jakovljevic M: Creative, person centered narrative psychopharmacotherapy (CP-CNP): from theory to clinical practice. Psychiatr Danub 2021; 33(Suppl 4):S1011-1024*
35. *Kallick-Kaufmann M: The micro and macro dimensions of gambling in the United States. Journal of Social Issues 1979; 35:7-26*
36. *Kendler KS, Gardner CO & Prescott CA: Religion, psychopathology, and substance use and abuse: A multimeasure, genetic-epidemiologic study. American Journal of Psychiatry 1997; 154:322-329*
37. *Kessler, RC, Hwang I, LaBrie R, Petukhova M, Sampson NA, Winters KC et al.: DSM-IV pathological gambling in the National Comorbidity Survey Replication. Psychol Med 2008; 38:1351–1360*
38. *Kim SW, Grant JE, Adson DE, Shin YC & Zaninelli R: A double-blind placebo-controlled study of the efficacy and*

safety of paroxetine in the treatment of pathological gambling. J Clin Psychiatry 2002; 63:501-7. doi: 10.4088/jcp.v63n0606. PMID: 12088161

39. *Labrie RA, Peller AJ, Laplante DA, Bernhard B, Harper A, Schrier T, Shaffer HJ: A brief self-help toolkit intervention for gambling problems: a randomized multisite trial. Am J Orthopsychiatry 2012; 82:278-89. doi:10.1111/j.1939-0025.2012.01157.x. PMID: 22506530*
40. *Ladouceur R, Sylvain C, Boutin C, Lachance S, Doucet C, Leblond J, Jacques C: Cognitive treatment of pathological gambling. J Nerv Ment Dis 2001; 189:774-80. doi:10.1097/00005053-200111000-00007. PMID: 11758661*
41. *Larimer ME, Neighbors C, Lostutter TW, Whiteside U, Cronce JM, Kaysen D, Walker DD: Brief motivational feedback and cognitive behavioral interventions for prevention of disordered gambling: a randomized clinical trial. Addiction 2012; 107:1148-58. doi: 10.1111/j.1360-0443.2011.03776.x. PMID: 22188239; PMCID: PMC3528181*
42. *Lee YS, Han DH, Kim SM & Renshaw PF: Substance abuse precedes Internet addiction. Addict Behav 2013; 38:2022–2025*
43. *Lee YM, Hyun MY, Choi S & Aquino E: The Mediating Role of Spirituality on Depression, Alcohol Use Disorder, and Problem Gambling Among Korean College Students: A Multiple-Mediation Analysis. J Addict Nurs 2021; 32:79-87. doi: 10.1097/JAN.0000000000000394. PMID: 34060758*
44. *Lorains FK, Cowlishaw S & Thomas SA: Prevalence of comorbid disorders in problem and pathological gambling: Systematic review and meta-analysis of population surveys. Addiction 2011; 106:490–498*
45. *Marlatt GA: Buddhist philosophy and the treatment of addictive behavior. Cognitive and Behavioral Practice 2002; 9:44-49*
46. *Neusner J, Brockopp JE & Sonn T: Judaism and Islam in practice: A sourcebook. London: Routledge, 2000*
47. *O'Brien CP: Foreword. In Rosenberg KP & Feder LC (eds.): Behavioral Addictions - Criteria, Evidence, and Treatment. London, Waltham, San Diego: Academic Press is an imprint of Elsevier, 2014:xiii-xiv*
48. *Pagani LS, Derevensky JL & Japel C: Predicting gambling behavior in sixth grade from kindergarten impulsivity: a tale of developmental continuity. Arch Pediatr Adolesc Med 2009; 163:238-43. doi: 10.1001/archpediatrics.2009.7. PMID: 19255391*
49. *Pallesen S, Molde H, Arnestad HM, Laberg JC, Skutle A, Iversen E, Støylen IJ, Kvale G & Holsten F: Outcome of pharmacological treatments of pathological gambling: a review and meta-analysis. J Clin Psychopharmacol 2007; 27:357-64. doi: 10.1097/jcp.013e3180dcc304d. PMID: 17632219*
50. *Peterson E & Forlano R: Partial dopamine agonist-induced pathological gambling and impulse-control deficit on low-dose aripiprazole. Australas Psychiatry 2017; 25:614-616. doi:10.1177/1039856217715996. PMID: 28696131*
51. *Petry NM: Patterns and correlates of Gamblers Anonymous attendance in pathological gamblers seeking professional treatment. Addict Behav 2003; 28:1049-1062, 12834650*
52. *Petry NM, Armentano C, Kuoch T, Norinth T " Smith L: Gambling participation and problems among South East Asian refugees to the United States. Psychiatr Serv 2003; 54:1142–1148*
53. *Petry NM: Pathological Gambling Etiology, Comorbidity and Treatment. Washington, DC: American Psychoogical Association, 2005*
54. *Petry NM, Stinson FS, Grant BF: Comorbidity of DSM-IV pathological gambling and other psychiatric disorders: Results from the National Epidemiologic Survey on Alcohol and Related Conditions. J Clin Psychiatry 2005; 66:564–574*
55. *Petry NM; Concurrent and predictive validity of the Addiction Severity Index in pathological gamblers. Am J Addict 2007; 16:272–282*
56. *Petry NM, Weinstock J, Ledgerwood DM & Morasco B: A randomized trial of brief interventions for problem and pathological gamblers. J Consult Clin Psychol 2008; 76:318-28. doi: 10.1037/0022-006X.76.2.318. PMID: 18377127; PMCID: PMC2738749*
57. *Petry NM: First steps first. Addiction 2009; 104:1070-1. doi:10.1111/j.1360-0443.2008.02450.x. PMID: 19563555*
58. *Petry NM, Weinstock J, Morasco BJ, Ledgerwood DM: Brief motivational interventions for college student problem gamblers. Addiction 2009; 104:1569-78. doi: 10.1111/j.1360-0443.2009.02652.x. PMID: 19686527; PMCID: PMC2758481*
59. *Petry NM, Blanco C, Stinchfield R & Volberg R: An empirical evaluation of proposed changes for gambling diagnosis in the DSM-5. Addiction 2013; 108:575–581*
60. *Petry NM: Introduction to Behavioral Addictions. In Petry NM (Ed): Behavioral Addictions: DSM-5® and Beyond. New York: Oxford University Press, 2016:1-6*
61. *Petry NM: Gambling Disorder -The First Officially Recognized Behavioral Addiction. In Petry NM (Ed): Behavioral Addictions: DSM-5® and Beyond. New York: Oxford University Press, 2016a:7-41*
62. *Petry NM, Zajac K & Ginley MK: Behavioral Addictions as Mental Disorders: To Be or Not To Be? Annu Rev Clin Psychol 2018; 14:399-423. doi: 10.1146/annurev-clinpsy-032816-045120. PMID: 29734827; PMCID: PMC5992581*
63. *Robbins TW & Clark L: Behavioral addictions. Current Opinion in Neurobiology 2015; 30:66–72*
64. *Rosenberg KP & Feder LC: Behavioral addictions: criteria, evidence, and treatment. Elsevier, 2014*
65. *Rosenthal F: Gambling in Islam. Leiden, Netherlands: Brill, 1975*
66. *Saiz-Ruiz J, Blanco C, Ibáñez A, Masramon X, Gómez MM, Madrigal M & Díez T: Sertraline treatment of pathological gambling: a pilot study. J Clin Psychiatry 2005; 66:28-33. doi: 10.4088/jcp.v66n0104. PMID: 15669885*
67. *Sescousse G, Redoute J, Dreher JC: The architecture of reward value coding in the human orbitofrontal cortex. J Neurosci 2010; 30:13095–13104*
68. *Shapiro F: Eye Movement Desensitization and Reprocessing: Basic Principles, Protocols, and Procedures. New York: Guilford Press, 1995*
69. *Slutske WS: Natural recovery and treatment-seeking in pathological gambling: results of two U.S. national surveys. Am J Psychiatry 2006; 163:297-302. doi: 10.1176/appi.ajp.163.2.297. PMID: 16449485*
70. *Slutske WS, Moffitt TE, Poulton R & Caspi A: Undercontrolled temperament at age 3 predicts disordered gambling at age 32: A longitudinal study of a complete birth cohort. Psychol Sci 2012; 23:510–516*

71. Sodhi M, Etminan M, Carleton B & Samii A: Risk of Pathological Gambling and Impulse Control Disorders With Dopamine Agonists: A Retrospective Cohort Study. J Clin Psychopharmacol 2019; 39:675-676. doi: 10.1097/JCP.0000000000001122. PMID: 31688453
72. Stucki S &, Rihs-Middel M:. Prevalence of adult problem and pathological gambling between 2000 and 2005: An update. J Gambl Stud 2007; 23:245–257
73. Thibaut F, Hoehe M: Addictive behaviors: where do we stand, and where are we going? Dialogues Clin Neurosci 2017; 19:215
74. Toneatto T: Cognitive psychopathology of problem gambling. Substance Use and Misuse 1999; 34:1593-1604
75. Tufekčić A, Avdibegović E, Hasanović M, Pajević I & Jakovljević M: Gambling from seven perspectives. Psychiatr Danub 2021; 33(Suppl 4):S749-756
76. Turner NE, Sharp NL, Zengeneh M & Spence W: Final report winners: Why do some develop gambling problems while others do not? (Report to the Ontario Ministry of Health, Substance Abuse Bureau). Toronto, Canada: Ontario Ministry of Health, 2003
77. van Holst RJ, van den Brink W, Veltman DJ & Goudriaan AE: Why gamblers fail to win: A review of cognitive and neuroimaging findings in pathological gambling. Neurosci Biobehav Rev 2010: 34:87–107
78. Walker MB: The psychology of gambling. New York, NY: Permagon Press, 1992
79. Walsh J: Spirituality and recovery from pathological gambling. Paper presented at the 15th National Conference on Problem Gambling, Seattle, WA, 2001
80. Walther B, Morgenstern M & Hanewinkel R: Co-occurrence of addictive behaviours: Personality factors related to substance use, gambling and computer gaming. Eur Addict Res 2012; 18:167–174
81. Wardman D, el-Guebaly N & Hodgins D: Problem and pathological gambling in North American Aboriginal populations: A review of the empirical literature, 2001
82. Welte J, Barnes G, Wieczorek W, Tidwell MC & Parker J: Alcohol and gambling pathology among U.S. adults: Prevalence, demographic patterns and comorbidity. J Stud Alcohol 2001; 62:706–712
83. Volberg RA, Munck IM, Petry NM: A quick and simple screening method for pathological and problem gamblers in addiction programs and practices. Am J Addict 2011; 20:220–227

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