Overview of gambling disorder

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INTRODUCTION

Gambling disorder (pathologic gambling) and problem gambling affects up to 15 million Americans and are common in young people. The number of people with gambling problems is increasing. The societal impact of pathological gambling and problem gambling is therefore also increasing, with related issues involving employment, personal relationships, financial solvency, and criminal pursuits.

No systematic process of educating, screening, and treating pathologic gamblers is currently in place. Provider and community education about the depth of this problem is crucial in identifying patients who are problem or pathologic gamblers and in helping treatment programs work. Primary prevention of this condition using educational programs that target at-risk youth and adults might help establish a decrease in problem gambling and a culture of controlled, responsible gambling behaviors among adults and their children.

This topic discusses the epidemiology, diagnosis, and treatment of gambling disorder.

DEFINITIONS

Gambling — Gambling is defined as placing something of value at risk with the hope of gaining something of greater value. Less than 10 percent of adult gamblers develop a gambling problem [1,2].

Gambling disorder — According to the American Psychiatric Association's Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5), gambling disorder is defined as persistent and recurrent maladaptive gambling behavior, as indicated by four or more of the following criteria [3]:

- Frequently preoccupied with gambling (eg, preoccupied with reliving past gambling experiences, handicapping or planning the next venture, or thinking of ways to get money with which to gamble)
- Needs to gamble with increasing amounts of money in order to achieve the desired excitement
- Has made repeated unsuccessful efforts to limit, cut back, or stop gambling
- Is restless or irritable when attempting to cut down or stop gambling
- Often gambles as a way of escaping from problems or relieving dysphoric moods (eg, feelings of helplessness, guilt, anxiety, or depression)
- After gambling and losing money, often gambles another day to get even ("chasing" after one's losses)
- Lies to family members, therapist, or others to conceal the extent of gambling
- Has jeopardized or lost a significant relationship (eg, spouse), job, or educational or career opportunity because of gambling
- Relies on others to provide money to relieve a desperate financial situation caused by gambling

In addition, the gambling behavior is not better accounted for by a manic episode (table 1).

Classification systems — A number of other terms have been used by gambling researchers and treatment professionals to describe patients who do not meet the DSM-5 criteria for gambling disorder, but who nevertheless appear to have substantial problems related to gambling. One large epidemiologic study, the Gambling Impact and Behavior Study, used the following definitions [2]:

- A low-risk gambler was defined as someone who has gambled but never lost more than $100 in a single day or year, or lost more than $100 in a single day or year but reported none of the diagnostic criteria used in the previous edition of the Diagnostic and Statistical Manual (DSM-IV). The DSM-IV criteria included all of the criteria used in DSM-5, as well as

the criterion that the individual has committed illegal acts (eg, forgery, fraud, theft, or embezzlement) to finance gambling [4].

- An at-risk gambler was defined as someone who has lost more than $100 in a single day or year and reported one or two DSM-IV criteria.
- A problem gambler was defined as someone who has lost more than $100 in a single day or year and reported three or four DSM-IV criteria.

In another approach, six classes of gamblers were identified, based on symptom profiles from a convenience sample study of lifetime gamblers and a computerized gambling assessment module. Gambling behaviors ranged from Class 1 nonproblem gambling, affecting 57 percent of sample, to Class 6 with high problem-gambling symptoms, including withdrawal symptoms and help-seeking behaviors, affecting 6 percent of the sample [5].

EPIDEMIOLOGY

Continued growth in the gambling industry might be causing an increase in the prevalence of gambling problems. In 1991, 80 percent of the United States' population gambled compared with only 61 percent in the 1960s [6]. In 1978 only two states had legalized gambling; in 1998, only two states had not legalized gambling [7].

A meta-analysis of 119 prevalence studies conducted in the United States and Canada found that the lifetime prevalence of pathologic and problem gambling in adults is 1.6 and 3.85 percent, respectively [1]. Higher rates were reported in children and adolescents (3.88 and 9.45 percent, respectively).

The Gambling Impact and Behavior Study was a large epidemiologic study conducted in 1999 that assembled and analyzed five data sets including national surveys (2,417 adults at home via telephone), 530 adults in gaming facilities, 534 adolescents (16 and 17 years of age at home via telephone), a 100 community statistical database, and 10 community case studies on the effects of casino openings [2]. The following findings were reported:

- It was estimated that 2.5 million adults are pathologic gamblers and 3 million adults are problem gamblers.
- Men are more likely to be pathologic, problem, and at-risk gamblers than women.
- The availability of a casino within 50 miles (compared with 50 to 250 miles) is associated with approximately double the prevalence of problem and pathological gamblers.

In addition, patterns of adult gambling have changed substantially since the last national survey published in 1976 [2]:

- Lotteries and casinos are now the most common forms of gambling.
- Gambling patterns among women have grown more like the gambling patterns of men.
- Only 14 percent of people have never gambled compared with 33 percent in 1975.
- Fifty percent of people have played the lottery, and 25 percent have gambled in casinos (double the rates from 1975).
- The greatest increase in gamblers is in adults age 65 and older. Nevertheless, the proportion of seniors who gamble is smaller than the proportion of younger gamblers.

Furthermore, people ages 65 and older are much less likely to be at-risk, problem, or pathologic gamblers than younger individuals. A cohort study of geriatric patients seeking treatment for pathologic gambling found that, compared with younger pathologic gamblers, geriatric gamblers are more likely to gamble secondary to boredom [8].

Societal impact — The economics of gambling are staggering. The amount of money wagered annually in the United States is estimated to be $0.5 trillion [9]. Americans spend approximately $31.5 billion annually on state lottery games alone, with many states becoming increasingly reliant on revenues from legalized gambling [2].

Pathologic and problem gamblers are more likely than other gamblers or nongamblers to have been on welfare, declared bankruptcy, and to have been arrested or incarcerated [2]. It is estimated that pathologic and problem gamblers in the United States cost society approximately $5 billion per year and an additional $40 billion in lifetime costs for productivity reductions, social services, and creditor losses [2].

State supported assistance programs and insurance coverage for treatment and prevention of problem gambling seems limited in comparison to the problem. The state of Georgia spent only $31,000 in 1998 on programs to assist problem gamblers despite a quadrupling of Gamblers Anonymous chapters since the start of the state lottery in 1993 [10]. Conflicts of interest arise for state or federally-supported gambling programs, when revenue benefits are weighed against public health issues [11].

It is also important to recognize that gambling (though not at a pathological level) may have positive attributes, such as a socialization activity among elders [12,13].

High-risk groups — No consistent data are available about the role that demographic factors play in problem or pathologic gambling. Nevertheless, a number of demographic groups have been identified as having a higher rate of gambling problems than the general population.

Such factors include:

- Age. Gambling is common among children and adolescents [1,2]. In one survey of 21,297 8th through 12th grade students in public and private schools in Vermont, 53 percent reported gambling in the past 12 months, and 7 percent reported problems attributable to gambling [14]. Senior citizens may also have an increased risk. In one survey of attendees at a senior center in the US, approximately 10 percent were problem or pathological gamblers, with greater prevalence among males [15].

- Gender. The prevalence of pathologic and problem gambling in men is two to three times higher than in women [2,16]. However, the progression of the disorder appears to be faster in women [17]. Women who entered an outpatient treatment program for gambling were found more often to be single than their male counterparts, and started gambling significantly later than men.

Other risk factors include:

- Adults in mental health treatment [1]
- Nicotine or substance abuse: alcohol, marijuana, inhalants, illegal steroids [1]
- African American [2,16]
- Positive family history [18,19].
- Childhood abuse and child neglect [20,21]
- Lower socioeconomic status [2,16]
- Witnessing trauma or being a victim of physical attack [21]
- Carrying a weapon or being involved in a fight [1]
- Seatbelt nonuse [1]

PATHOPHYSIOLOGY

In the DSM-5, gambling disorder is categorized as a nonsubstance-related and addictive disorder [3]. However, there is considerable debate about whether pathologic gambling is a nonsubstance abuse-related disorder or an impulse control disorder [22-24]. In studies of patients with pathologic gambling, neurobiological findings and disturbances in behavior have been observed that are consistent with each hypothesis:

- Support for the hypothesis that the pathogenesis of gambling disorder is related to impulse control disorders comes from studies that found changes in serotonin metabolites in both pathologic gamblers and patients with impulse control disorders [23,25]. Men who are pathologic gamblers also experience abnormal responses to challenges with serotonergic ligands.

- A relationship between pathologic gambling and substance abuse is suggested by similarities between the two disorders, including symptoms of tolerance, withdrawal, anticipatory craving, and a chronic relapsing course [23,24]. Common genetic vulnerability for pathologic gambling and alcohol abuse also has been reported among twins [18]. Finally, studies of decision making have found that compared with healthy controls, people with substance use disorders more frequently choose large immediate rewards when presented with gambling tasks despite larger intermittent punishments [23,26].

It may be that elements of both impulse and substance abuse disorders play a role in the pathogenesis of pathologic gambling.

Emerging concepts about pathologic gambling view it as one of the "natural addictions" (eg, sexual addiction and some overeating disorders) which may involve the release of endogenous opioid peptides, such as enkephalin, in the ventral tegmental area of the brainstem [27]. In addition, problem gamblers seem to exhibit more "activation" of the hypothalamic-pituitary-adrenal axis than nonproblem gamblers, as well as changes in the brain-reward pathways and prefrontal cortex [28,29].

Dysregulation of dopaminergic tone may also play a role in the development of pathologic gambling. There have been case reports of patients with Parkinson disease developing pathologic gambling after being started on dopaminergic therapy [30-33]. Pathologic gambling has also been reported in patients with restless leg syndrome taking dopaminergic agonists [34]. Pramipexole is the dopamine agonist implicated most frequently, and accounted for 39 of the 67 reports to the United States Food and Drug Administration of possible drug-related pathological gambling [35].

Genetics — Genes are important in the etiology of pathologic gambling [36]. A twin study evaluated the concordance for lifetime pathologic gambling in a sample of 6744 males who served in the military, which included 1874 monozygotic twin pairs and 1498 dizygotic twin pairs. The lifetime history of pathologic gambling in the full sample was 1 percent. A lifetime history of pathologic gambling was found in 23 percent of the monozygotic and 10 percent of the dizygotic co-twins of men with pathologic gambling [18].

Genes are as important in causing gambling disorder in women as they are in men. A twin study that included 867 monozygotic twin pairs and 1008 dizygotic twin pairs found that genetic influences accounted for 49 percent of the variation in liability for pathologic gambling, and that there was no evidence of sex differences [37].

DIAGNOSIS AND SCREENING

The diagnosis of gambling disorder (pathologic gambling) is made based upon the criteria in the DSM-5, which are described elsewhere in this topic (see 'Definitions' above). The criteria from the previous edition of the DSM-IV have been validated for both White and Black Americans [38].

Pathologic gambling is often overlooked and undiagnosed, and evidence regarding the validity and reliability of identification strategies is insufficient [39]. Gamblers may hide or deny gambling-related problems [16]. Nevertheless, neither the efficacy of screening for problem gambling in the primary care setting, nor the optimal screening tool has been established.

The South Oaks Gambling Screen (SOGS) is the only extensively used, validated screening tool for the identification of pathologic gamblers [40]. It is a 20 item scale that includes weighted items to determine if the patient is hiding evidence of gambling, spending more time or money gambling than intended, arguing with family members over gambling, and borrowing money from a variety of sources to gamble or to pay gambling debts [41]. A national study in New Zealand concluded that SOGS was good at detecting pathologic gambling among those who would currently meet the diagnostic criteria, but was associated with a high false-positive rate [42,43]. In addition, as the types of gambling changed in the 1980s and 1990s, a number of items on the SOGS appeared to be outdated, prompting a search for other screening tools.

Although not validated, the Gamblers Anonymous Survey (table 2), which includes 20 questions, may be helpful in gathering clinical information and can help lead the patient to the Gamblers Anonymous program. Seven positive responses to the survey questions suggest the diagnosis of pathologic gambling. A similar survey, "Are you living with a compulsive gambler?" [40], can be used to assist family members in coping with a problem gambler.

The easiest instrument for the primary care clinician to use is the LIE/BET questionnaire [44], which is similar to the CAGE questions asked as part of alcoholism screening. This tool has been validated in community-dwelling adult and adolescent populations [45]. It is composed of two questions that are sensitive to the core issues of gambling disorder:

- "Have you ever had to lie to people important to you about how much you gambled?"

- "Have you ever felt a need to bet more money?"

A yes answer to either question suggests the need to investigate for the presence of additional criteria for problem or pathologic gambling.

COMORBID PSYCHIATRIC DISORDERS

High rates of depressive, bipolar, psychotic, anxiety, personality, and substance abuse disorders (including alcohol and tobacco), as well as attention deficit hyperactivity disorder, are seen in patients with gambling disorder and problem gambling [16,46-48]. In one study, for example, people with pathologic or problem gambling were compared with nongamblers (people who had gambled fewer than two times in their life) and were 3.3 times as likely to report ever having experienced major depression, 3.5 times more likely to report schizophrenia, 2.3 times more likely to report phobias, 6.1 times more likely to report antisocial personality, 3.3 times more likely to report current or past alcohol abuse or dependence, and 2.1 times more likely to report current or past nicotine dependence [16].

At some point during their lives, major depressive disorder is likely to occur in 76 percent of pathologic gamblers, with recurrent depressive episodes likely to occur in 28 percent [49]. This high correlation suggests that the coexistence of depression and gambling may help discriminate pathologic from nonpathologic gambling.

Visitors to and residents of major gaming communities experience an elevated suicide rate; in Atlantic City (United States), high suicide rates for visitors and residents appeared only after gambling casinos were opened [50]. In addition, a survey of individuals calling a gambling telephone help-line (n = 202) found that risk factors for suicidal ideation included female sex, increased gambling severity (especially those engaged in illegal gambling), history of psychiatric disorders, financial problems, and family conflict related to gambling [51].

The relationship between gambling and alcohol use was investigated in a study which found that 12.9 percent of heavy drinkers had one or more gambling related problem compared with 5 percent of nondrinkers [46]. Eighteen percent of persons with probable alcohol dependence had at least one gambling-related problem, and 10 percent of heavy drinkers were probable pathologic gamblers.

Patterns of gambling are different for substance abusers compared to nonusers. A nationally representative sample found that substance-abusing gamblers had a younger age of onset of gambling, and were more likely to engage in heavier gambling with greater risk [52].

TREATMENT

It is difficult to make evidence-based recommendations for the treatment of pathologic gambling because few outcome studies have been conducted, and most involved only small samples and have methodologic flaws [53]. As an example, a 2020 review concluded that evidence about the effectiveness of interventions is insufficient [39].

Psychotherapy — Aggregated data from randomized trials of psychological interventions in patients with pathologic gambling support a modest to moderate benefit for behavioral techniques (imaginal desensitization) and cognitive-behavioral interventions [53-59]. A meta-analysis of psychological treatment for pathological gambling demonstrated significant positive short- and long-term effects [60].

Initiation of psychological treatment for pathological gambling begins with helping the patient overcome irrational thoughts. Pathologic gamblers are thought to believe they have the ability to control chance events by relying on superstitious behavior or methods [25].

Psychological therapies stress identification of reasons for gambling, confrontation of defenses, and cessation of chasing behaviors. Cognitive treatments focus on challenging and correcting the patient's errors in thinking; for example, exploring and understanding the illusion of control over chance events [61].

Behavioral therapy considers pathologic gambling a learned behavior and relies on techniques such as systematic exposure or desensitization and skill development (eg, relaxation techniques and improving social skills) [55-57]. Cognitive-behavioral therapy combines elements from both the behavioral and cognitive treatment approaches, using systematic exposure or desensitization, relaxation techniques, social skills training and covert sensitization, as well as relapse prevention [57].

Although these counseling and treatment techniques may be beyond the comfort level and experience of most physicians, awareness of treatment options and referral to qualified mental health providers are important in the successful treatment of pathologic and problem gamblers and their families.

Unfortunately, patients are often reluctant to seek psychological help, and one-half of patients referred to mental health services fail to follow through on the referral [62]. Thus, counseling and treatment for gambling-related problems may depend solely on a trusted relationship with a primary care clinician.

Useful interventions that can assist the patient with gambling-related disorders include:

- Enlisting family members to assist in encouraging the pathologic gambler to follow through on treatment recommendations.
- Treating the patient for comorbid conditions of major affective disorders and substance abuse, as well as intervening to reduce the risk of suicide.
- Providing the gambler and family members with support resources. The National Council on Problem Gambling can be reached by calling 800-522-4700 or accessing its website. Their hotline will route the caller to an affiliate of the national organization within the caller's state and provide information on local Gamblers Anonymous chapters and Gam-Anon meetings (for family members and friends). They also provide information about counselors who are trained in treating patients with gambling addictions and other treatment programs and resources.

Treatment goals for patients who are pathologic gamblers are similar to patients being treated for depression or alcoholism in that they focus on restoring a "normal" way of thinking and living to patients.

Gamblers Anonymous — Modeled after Alcoholics Anonymous, Gamblers Anonymous is the primary self-help group for gamblers and uses a 12-step, abstinence-based treatment program [63,64]. The effectiveness of Gamblers Anonymous has not been demonstrated in controlled studies and, unlike alcoholism, some researchers have discovered that complete abstinence from gambling may not be necessary for successful treatment [22].

Pharmacotherapy — Pharmacotherapy for problem gambling is most effective when directed toward the patient's comorbid psychiatric condition; a diagnosis of bipolar disorder, OCD, ADHD, and substance abuse should be considered in all patients with gambling disorder [65].

Antidepressant medications — Initial research demonstrated pharmacotherapy to have a role in the treatment of pathologic gambling's coexisting depression, rather than as a primary treatment for pathologic gambling [22]. However, over the past decade selective serotonin reuptake inhibitors (SSRIs) have been found in small trials to be effective in reducing gambling behaviors independent of their effect on mood and anxiety disorders.

The efficacy of fluvoxamine was studied in a randomized, placebo-controlled study of 10 men with pathologic gambling [66]. The study used a crossover design, so that each patient received 8 weeks of fluvoxamine and 8 weeks of placebo. Treatment with fluvoxamine resulted in a significantly greater percent improvement in overall gambling severity on the Pathological

Gambling Clinical Global Impression scale. This difference between the treatment and placebo groups was only significant in the second phase of the trial, suggesting that there was an initial placebo effect that diminished with time.

A large placebo effect was also noted in a randomized controlled trial of sertraline [67]. The response rate was the same for sertraline and placebo (74 percent and 72 percent, respectively).

Other SSRIs, including citalopram and fluoxetine, have been found effective for the treatment of nondepressed pathologic gamblers in open-label studies [68,69]. In one report, fluoxetine in combination with psychotherapy was associated with higher remission rates compared with psychotherapy alone [69]. A small, open-label trial of bupropion also suggested possible benefits [70].

These studies are limited by small size, short follow-up, and in some cases study design. Thus, confirmation in larger randomized, controlled trials with extended follow-up is required before definitive recommendations can be made.

Opioid antagonists — One review of randomized trials in patients with gambling disorder found limited evidence that opioid antagonists such as naltrexone may be helpful [71]. However, naltrexone may cause liver function abnormalities [72].

A randomized double-blind trial of nalmefene in 207 persons with pathologic gambling found that nalmefene 25 mg per day significantly reduced gambling assessment scores over a 16-week trial period compared with placebo [73]. Higher doses of nalmefene were not more effective but caused more side effects. Overall, however, the dropout rate before week 16 was high in all groups: 47 percent of the placebo group and 31 percent of the nalmefene group completed the study. Nalmefene is not currently available in oral formulation in the United States outside of research settings.

Other — A randomized trial suggested that in patients with bipolar spectrum disorder (other than bipolar I disorder) and pathologic gambling, lithium may be of benefit [74]. Topiramate appeared to have some efficacy in a randomized trial [75]. Olanzapine was not more effective than placebo in another randomized trial [76].

PUBLIC HEALTH APPROACH

A public health approach to control problem gambling has been proposed, based on the lessons learned from addressing tobacco availability and addiction [11]:

- Decrease available gambling locations and lottery venues

- Ban advertising for gambling activities
- Keep lottery tickets out-of-sight
- Plain package gambling products, and add warning label with risk of problem gambling
- Enforce the legal age for gambling
- Regulate or ban instant play/reward games (immediate gratification may exacerbate gambling behavior)
- Decrease the number of video lottery terminals
- Consider a moratorium on building new casinos

SUMMARY

- Pathologic and problem gambling affect 5 to 15 million Americans and are a growing problem, particularly among older people. Gambling disorder, as defined in the American Psychiatric Association's Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5), is persistent maladaptive gambling behavior, meeting a set of specified criteria. (See 'Definitions' above.)

- Risk factors for gambling include young age, male, mental health or substance abuse conditions, exposure to violence, positive family history, lower socioeconomic status. (See 'Epidemiology' above.)

- A positive answer to either of two questions suggests need for investigation of possible problem gambling: "Have you ever had to lie to people important to you about how much you gambled?" and "Have you ever felt a need to bet more money?" (See 'Diagnosis and screening' above.)

- The use of behavioral and, in particular, cognitive-behavioral therapies for patients with pathologic gambling is supported by randomized trials with some methodologic flaws. We suggest psychological treatment be included in a treatment plan for all patients with problem gambling. Unfortunately, patients are often reluctant to seek psychological help, and one-half of patients referred to mental health services fail to follow through on the referral. (See 'Psychotherapy' above.)

- Gamblers anonymous is a self-help program for pathologic and problem gamblers. The efficacy of this program has not been demonstrated in controlled studies, although it may be a reasonable option, particularly for patients resistant to psychiatric referral. The gambler and family members also should be provided with support resources such as the

National Council on Problem Gambling (available at the website or 800-522-4700). (See 'Gamblers Anonymous' above.)

- Pharmacotherapy for problem gambling is most effective when directed toward the patient's comorbid psychiatric condition; a diagnosis of bipolar disorder, OCD, ADHD, and substance abuse should be considered in all patients with gambling disorder. Pharmacotherapy may have some benefit, independent of the underlying comorbid condition, but the data are only preliminary. SSRIs have shown mixed results with a substantial placebo effect. Opioid antagonists (naltrexone and nalmefene) have shown effectiveness in small randomized trials. (See 'Pharmacotherapy' above.)

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