The Epidemiology of Pathological Gambling

Rachel A. Volberg, PhD

Gambling is a broad concept that includes diverse activities undertaken in a wide variety of settings, appealing to different sorts of people and perceived in various ways. People take part in gambling activities because they enjoy them and obtain benefits from their participation. For most individuals, gambling is generally a positive experience; however, for a minority, gambling is associated with difficulties of varying severity and duration. Some regular gamblers develop significant, debilitating problems that also typically result in harm to people close to them and to the wider community.¹

Pathological gambling was first included in the DSM-III.² Each revision of this manual has seen changes in the diagnostic criteria for pathological gambling. The American Psychiatric Association presently defines the essential features of pathological gambling as:

- a continuous or periodic loss of control over gambling,
- a progression, in gambling frequency and amounts wagered, in the preoccupation with gambling and in obtaining monies with which to gamble, and
- a continuation of gambling involvement despite adverse consequences.

A formal diagnosis of pathological gambling is made by an appropriately qualified and experienced clinician following a clinical interview. To make a diagnosis of pathological gambling, the clinician must determine that a patient has met 5 or more of the 10 diagnostic indicators associated with pathological gambling (Table 1).

Problem gambling is another term often used to refer to individuals with difficulties related to their gambling. In some situations, the term is used to refer to those whose gambling-related difficulties are less serious than those of pathological gamblers. In other situations, it is used to indicate all of the patterns of gambling behavior that compromise, disrupt, or damage personal, family, or vocational pursuits.³ From this perspective, pathological gambling can be viewed as one end of a continuum of problematic gambling. Problem gamblers are of concern because they represent a much larger proportion of the population than pathological gamblers. Problem gamblers are also of interest because of the possibility that their gambling-related difficulties may become more severe over time.

In epidemiologic research, individuals generally are categorized as problem gamblers or probable pathological gamblers on the basis of their endorsement of items included in one or more of the screening tools developed to identify individuals with gambling-related difficulties. In general, use of the term probable distinguishes the results of prevalence surveys, where classification is based on a telephone interview, from a clinical diagnosis.

MEASURING PROBLEM GAMBLING

Following inclusion of the diagnosis of pathological gambling in the DSM-III, researchers began to investigate problem gambling using methods from psychiatric epidemiology. At this time, few tools existed to measure gambling-related difficulties. The only tool rigorously developed and tested for its performance was the

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² Dr. Volberg has no industry relationships to disclose.
South Oaks Gambling Screen (SOGS). Closely based on the new psychiatric criteria, the SOGS originally was developed to screen for gambling problems in clinical populations.4

Like other tools in psychiatric research, the SOGS was quickly adopted for use in epidemiologic research. The SOGS was first used in a prevalence survey in New York State.5 By 1999, the SOGS had been used in population-based research in more than 45 jurisdictions in the United States, Canada, Asia, and Europe.6-11 This widespread use of the SOGS was due, at least in part, to the great advantage of comparability within and across jurisdictions that came with use of a standard tool.12 Although there were increasingly well-focused grounds for concern about the performance of the SOGS in nonclinical environments, this tool remained the de facto standard in the field until the mid-1990s.

In 1994, the American Psychiatric Association adopted new criteria for the diagnosis of pathological gambling. These changes incorporated empirical research that linked pathological gambling to other addictive disorders such as alcohol and drug dependence.13 Since the publication of the DSM-IV, a number of new screens to detect problem and pathological gambling among adults and adolescents have been developed.14-18 Despite this proliferation, the psychometric properties of most of these new tools remain unexamined. Another concern is how to calibrate the performance of these new screens with the results of more than a decade of SOGS-based research. While research in several North American and international jurisdictions shows that the scores on several of these new problem gambling screens and the SOGS are highly correlated and are probably measures of the same underlying construct,19-21 there is still much work to be done in this area.

**Prevalence of Pathological Gambling**

Until 1998, there was only one national prevalence survey conducted in the United States, carried out in 1975.22 The survey was carried out before the official recognition of pathological gambling as a medical disorder, and the screen used to measure “compulsive” gambling in this survey has been criticized.22 Nevertheless, this study provided the first prevalence estimates of this disorder in the general population. The overall prevalence of “probable compulsive gambling” was deemed to be 0.77% (1.1% for men and 0.5% for women). An additional 2.3% were classified as “potential compulsive gamblers.” In Nevada, which was over-sampled...
because of the researchers' interest in comparing states with and without casino gambling, the prevalence of "probable compulsive gambling" was much higher than the national average, namely 2.5% (3.3% for men and 2% for women).

In 1998, the National Opinion Research Center (NORC) conducted the second national prevalence survey for the National Gambling Impact Study Commission. Guidelines from the Commission specified that a screen based on the DSM-IV criteria be used to identify problem and pathological gamblers in the general population. In constructing the questionnaire for the adult, youth, and patron components of the national survey, the NORC team developed a new problem gambling screen, the NODS, which was tested for its performance in a clinical sample prior to adopting it in the national survey.* In these and subsequent tests, the lifetime NODS demonstrated strong internal consistency, high sensitivity and good specificity, and retest reliability although the past-year version did not perform as well. This is what one would expect if pathological gambling is appropriately conceptualized as a chronic disorder.

Results from the combined adult and patron surveys showed the prevalence of pathological gambling (NODS≥5) was 1.2% (1.7% for men and 0.8% for women). A further 1.5% of the respondents in the combined sample were classified as "problem gamblers" (NODS=3 or 4). Based on these figures, the NORC team estimated approximately 2.5 million American adults are pathological gamblers and another 3 million adults could be considered problem gamblers. Extending the criteria more broadly, an additional 7.7% of the respondents were classified as "at risk" (NODS=1 or 2). This represents approximately 15 million American adults who can be considered at risk for problem gambling.

CHANGES IN PREVALENCE OVER TIME

Given extensive differences in how gambling problems were measured, it is difficult to compare the results of two national surveys conducted 25 years apart. There is a great deal more information about changes in the prevalence of prob-

* A copy of the NODS is available on the NGISC website at www.ngisc.gov/reports/res-pubs.html.

lem and pathological gambling from the numerous state- and province-level surveys that have been conducted in North America since 1985.

A recent meta-analysis of a large sample of North American studies in the adult population (N=120) obtained a mean prevalence rate of past-year pathological gambling of 1.1% (±0.24%) and a mean prevalence rate of past-year problem gambling of 2.8% (±0.85%). When the Harvard research team compared the average prevalence rate in studies conducted between 1977 and 1993 with that of studies conducted between 1994 and 1997, they found the combined lifetime prevalence of problem and pathological gambling was significantly higher in the later studies (6.7% compared with 4.4%). Similarly, past-year prevalence rates of pathological gambling averaged 0.8% among surveys carried out between 1977 and 1993 versus 1.3% among surveys carried out between 1994 and 1997. As with the lifetime rates, this difference was statistically significant.

To understand how problem gambling prevalence can change over time, it is helpful to examine replication surveys of problem and pathological gambling in the general population. There are now a substantial number of North American jurisdictions where replication studies to assess changes in the current (past-year) prevalence of problem and pathological gambling have been carried out. All of these surveys are based on telephone interviews with randomly selected respondents in the general population. In each survey, problem and pathological gambling was assessed using the SOGS-R, a modified version of the original screen that includes items to assess past-year as well as lifetime behaviors. While there are some interesting patterns in these data, a degree of caution is required in their interpretation due to the relatively small sample sizes and complex sampling designs used in all of the surveys.

Table 2 shows changes in the prevalence of past-year problem and probable pathological gambling in jurisdictions where current prevalence data were collected at baseline and replication. The table is arrayed by the interval of time between the baseline and the replication study. The table shows there is little change in prevalence rates in jurisdictions where replication studies were done 2 and 3 years after the baseline study. In jurisdictions
where replication studies were carried out 4 to 8 years after the baseline study, significant changes in problem gambling prevalence were identified in 3 of 4 cases. In Minnesota, the increase in problem gambling was statistically significant. In Montana, the increase in probable pathological gambling and the combined prevalence of problem and probable pathological gambling were both statistically significant. In North Dakota, the combined prevalence rate remained stable, but there was a statistically significant increase in probable pathological gambling. On the other hand, in Washington state, there was a significant decrease in the prevalence of probable pathological gambling.

Another observation based on Table 2 is that while combined prevalence rates may not change appreciably over time, there can be substantial change in the proportion of the more severe category (probable pathological gambling) to the overall prevalence rate. For example, probable pathological gamblers represented 31% of the overall prevalence rate in Manitoba in 1993 but 44% of the overall prevalence rate in 1995. In New Brunswick, probable pathological gamblers represented 31% of the overall prevalence rate in 1992 compared to 54% in 1995. This concentration at the more severe end of the continuum is also apparent in Louisiana, Montana, and North Dakota. These increases in the proportion of probable pathological gambling suggest that, in some jurisdictions, problem gamblers

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**TABLE 2**

<table>
<thead>
<tr>
<th>Year (A)</th>
<th>State/Province (B)</th>
<th>Current Problem % (C)</th>
<th>Current Probable Pathological % (D)</th>
<th>Current Total % (E)</th>
<th>Ratio (D:E)</th>
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<tr>
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<td>0.6</td>
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<td>1.3</td>
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*From references 1, 21, and 30.
are increasingly experiencing severe, rather than moderate, difficulties related to their gambling.

**Risks and Impacts of Pathological Gambling**

The authors of the Harvard meta-analysis identified several risk factors associated with higher rates of what they called “disordered” gambling. They concluded those most at risk for disordered gambling are:

1. Indifferent or insensitive to the social pressures or sanctions against immoderate behavior (e.g., the social separation often experienced by people with major mental illness, or the new independence commonly experienced by college students),
2. Extremely sensitive to the perceived social pressures to participate in activities that they consider normative (e.g., as a result of the peer pressure often experienced by adolescents), or
3. In physical or emotional discomfort that is ameliorated by the gambling experience (e.g., people who are depressed and find that gambling relieves their discomfort).

As a result, they argued, “being young, male, in college, having psychiatric co-morbidity, or a history of anti-social behavior are factors that represent meaningful risks for developing gambling-related problems.” In contrast to the Harvard meta-analysis, recent surveys in New Zealand and Sweden indicate those at risk for gambling problems are the groups most disadvantaged and marginalized by changes occurring in national and international economies worldwide: young, unemployed male members of ethnic minorities. The results of several other studies, including recent prevalence surveys in Louisiana and Montana as well as the national survey in Australia, suggest gambling problems are increasingly likely to affect women.

The U.S. national survey of gambling impacts and behavior found: (1) men are more likely to be pathological and problem gamblers than women, (2) pathological and problem gambling are proportionately higher among African Americans than among other ethnic groups, (3) approximately 1 in 5 of the 1% of adults who consider themselves professional gamblers can be classified as pathological, and (4) the availability of a casino within 50 miles (versus 50 to 250 miles) is associated with almost double the prevalence of problem and pathological gambling. The U.S. research team also found problem and pathological gamblers are significantly more likely than others in the general population to have been divorced, suffered physical and psychological health problems, lost a job, been on welfare, declared bankruptcy, and been arrested and incarcerated.17

While pathological gambling is defined as a chronic and progressive disorder, it is important in considering the public health risks of problem and pathological gambling to note that not all of the features of the disorder need be present at one point in time. Some of the impacts problem and pathological gamblers may experience include psychological difficulties, such as anxiety and depression, exacerbation of alcohol and drug problems, and attempts at suicide as well as stress-related physical illnesses such as hypertension and heart disease. Interpersonal problems include arguments with family members, friends, and coworkers and breakdown of relationships, often culminating in separation or divorce. Employment and school problems include poor work performance, abuse of leave time, and loss of employment. Financial effects loom large and include reliance on family and friends, substantial credit card debt, unpaid creditors, and bankruptcy. Finally, there may be legal problems as a result of criminal behavior undertaken to obtain money to gamble or pay gambling debts.

**Pathological Gambling and Specific Gambling Activities**

Little attention has been paid to particular features of gambling activities and their likely impact on the prevalence of problem and pathological gambling. While gambling activities can be classified in many ways, research suggests that event frequency, or the number of opportunities to wager in a specified period of time, is closely related to the development of gambling problems. Another concern is the spread of “convenience gambling” outside the venues traditionally reserved for gambling. Convenience gambling is defined by the

*The term “disordered gambling” was adopted by the Harvard researchers in an effort to transcend the variations in terminology used in the field of gambling studies. Disordered gambling refers to the full range of disruptions experienced by individuals with gambling-related difficulties.*
National Gambling Impact Study Commission as "legal, stand-alone slot machines, video poker, video keno, and other EGDs (electronic gaming devices)" available "in bars, truck stops, convenience stores, and a variety of other locations."28

The recent Australian national survey is particularly relevant in this context because of the widespread availability of gaming machines in Australia.29 There are nearly 200,000 gaming machines in social clubs, hotels, bars, and restaurants throughout Australia. Looking across different Australian states, the Productivity Commission researchers found that as the number of machines per capita increased, the proportion of the adult population that played gaming machines weekly increased as did the proportion of problem gamblers among weekly players.

The potential link between the availability of specific types of gambling and problem gambling prevalence is a critical policy issue. While causation is difficult to prove without longitudinal research, the results of the Australian study as well as several prevalence surveys in the United States suggest there is a strong correlation between the availability of gaming machines and higher prevalence rates of problem and pathological gambling, particularly among women.29

FUTURE PREVALENCE RATES

While the prevalence of problem and pathological gambling has increased significantly in the United States, a critical question is: will these prevalence rates continue to rise? In the early 1990s, researchers believed they were seeing the early consequences of a rapid expansion in gambling availability and participation. All of the available research suggested problem gambling prevalence rates would continue to increase, particularly as gambling participation grew within sectors of the population that had previously gambled little if at all. Several recent state surveys, including New York, North Dakota, Oregon, and Washington state21,29,31 as well as the recent national survey in New Zealand, have instead identified significant declines in gambling participation in the general population over the course of the decade. These same jurisdictions have seen a stabilization or decrease in the combined prevalence of problem and pathological gambling, although in several instances, there have been significant increases in the proportion of probable pathological gamblers within the larger population of problem gamblers.

These findings lend credence to the scenario drawn by the Harvard researchers.32 The Harvard meta-analysis drew attention to lessons learned about marijuana and hallucinogen users from the 1960s and 1970s. The authors note that, like early drug users, "gamblers who first tested opportunities to gamble legally were different from those who began to gamble only when playing these games was sufficiently widespread that it was normative."16 In a later paper, the same researchers suggest, on the basis of social learning models, that "while it is possible that the prevalence of these problems will continue to increase in the near future, it is also possible that it will remain constant or even begin to diminish."32

SUMMARY

Gambling industries have grown tenfold since the Commission on the Review of the National Policy Toward Gambling sponsored the first comprehensive national survey on American gambling behavior in 1975.22 Today, a person can make a legal wager of some sort in every state except Utah, Tennessee,4 and Hawaii; 37 states have lotteries, 28 states have casinos, and 22 have off-track betting.28 Just as telling as the expansion of gambling into new jurisdictions is the growth of gambling revenues. Between 1975 and 1999, revenues from legal wagering in the United States grew by 1,800% from $3 billion to $58 billion.22,33 Americans now spend more on legal gambling than they spend annually on movie tickets, recorded music, theme parks, spectator sports, and video games combined.

The explosion in the availability of legal gambling has not been matched by a similar expansion in either the recognition of problem and pathological gambling or in the availability of services. In 1985, only three states, Connecticut, New Jersey, and New York, funded services for problem gamblers. In 1998, there were services for problem and pathological gamblers in 21 states. Altogether, these programs received $21 million in funding from a range of sources, including state governments, gaming companies, and founda-
tion grants. This level of funding represents one-tenth of 1% of the $18 billion in gaming taxes collected by state governments in 1998 and an even smaller portion of the gross revenues flowing annually to legal gambling industries in the United States.34

Outside of specialized programs, clinicians rarely screen for gambling involvement or gambling problems among their patients and are often uncertain about appropriate referrals or treatment, even when a gambling problem or pathology is identified. In addition to the APA criteria, there are numerous tools for use in identifying problem gamblers in clinical settings.4,15-16 There is also an increasing range of treatment options available, including hospital inpatient programs for individuals who are seriously depressed or suicidal, and outpatient programs in mental health and addiction settings that offer individual and group counseling. There is also a growing number of certified gambling counselors in private practice who provide individual and group therapy as well as marital and family counseling.

A recent Cochrane review shows treatment for pathological gambling can be effective.35 While there is still much to learn about this disorder, health professionals must recognize the importance of identifying gambling problems, particularly among patients presenting with alcohol and substance abuse problems, major depression, and suicidal ideation. Such identification is likely to lead to improved treatment outcomes and reduced rates of recidivism in existing mental health and addiction programs as well as expanding the range of services available to problem gamblers and their families.

REFERENCES

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