RESEARCH ARTICLES

A Survey of Pharmacy Students' Experiences With Gambling

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Objectives. To assess gambling among pharmacy students using the South Oaks Gambling Screen (SOGS).

Methods. Six hundred fifty-eight pharmacy students enrolled at Creighton University were surveyed to determine the extent and characteristics of their gambling.

Results. Four hundred eighty-eight students (74.2%) participated (mean age was 26.6 years and 63.4% were female). Almost two-thirds (63.1%) gambled at least once during the past 12 months. Slightly more than 16% (80) of students were identified as "at-risk" (SOGS scores of 1 to 2). Another 5% (24) were likely to be problem gamblers (SOGS scores of 3 to 4), while 1% of students were identified as probable pathological gamblers (SOGS scores ≥ 5). Students who gambled were significantly more likely than non-gamblers to be single males. Gamblers with a score ≥ 1 were significantly more likely to report gambling had affected their relationships with others, compared to casual gamblers.

Conclusions. Gambling is a common activity among pharmacy students. While the incidence of problem gambling is relatively small, the percentage of our students who may be at-risk for gambling-related problems is noteworthy.

Keywords: gambling, risky behaviors, South Oaks Gambling Screen

INTRODUCTION

The widespread availability and legalization of various gambling venues has resulted in greater societal acceptance of this activity. For the majority of participants, gambling represents just another form of entertainment. For a few, however, participation in gambling activities has significant negative consequences. The Diagnostic and Statistical Manual for Mental Disorders-IV-TR defines pathological gambling as a "persistent and recurrent maladaptive gambling behavior that disrupts personal, family, or vocational pursuits."¹ The reported prevalence of pathological gambling among the general adult population in the United States is consistently between 1% and 2%, with an additional 2% to 3% characterized as "problem" gamblers.² Reported prevalence rates of problem and pathological gambling among college students, however, varies widely. Approximately 2.6% to as many as 26% of college students have characteristics of problem and/or pathological gambling, with the highest percent-

age among athletes and members of fraternities.³⁻⁷ The standard instrument to assess the presence of problematic gambling behavior in adults is the South Oaks Gambling Screen (SOGS) developed by Lesieur and Blume.⁸ Participants studied using the screen were scored 1 point for each positive (affirmative) answer with a maximum possible score of 20. The screen is used most often to identify populations of probable problem gamblers (SOGS score = 3 to 4) and probable pathological gamblers (SOGS score ≥ 5). In addition, Doiron and Nicki⁹ have described a population of gamblers they termed "at-risk" who scored 1 to 2 points. The screen was reliable in identifying probable pathological gamblers with a reported Cronbach's alpha = 0.97, $p < 0.001$. The validity of the instrument when tested among 213 members of Gamblers Anonymous and 384 college students revealed a false-positive rate of 1.4% and 1.3%, respectively. The false negatives were likewise low at 0.5% and 3.4%. Use of the screen has come under scrutiny with criticism that it overestimates the prevalence rate of problem gamblers.¹⁰ Weinstock et al,¹¹ assessed the psychometric properties of the screen in a group of 159 college students, and found the screen demonstrated good specificity (88%) and sensitivity (71%), and correctly classified participants 83.8% of the

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time. It has been used as the instrument of choice in over 200 studies. A meta-analysis of 15 studies conducted between 1994 and 2005 that used the screen identified a disordered gamblers prevalence rate of 7.9% among 9,794 college students.¹²

The consequences of problem gambling are significant. Adult problem gamblers are often afflicted with other addictive disorders, have a higher incidence of marital dysfunction, are more likely to be unemployed, and commit crimes that support their gambling behavior, such as theft by embezzlement, forgery, and robbery.¹³⁻¹⁵ College students who gamble have a higher involvement in other risky behaviors (binge drinking, cigarette smoking, and marijuana use) than their non-gambling counterparts.^{6,7,16}

The opportunities to engage in gambling activities have increased dramatically over the past decade. Within 5 miles of the Creighton University campus, across the state line in Iowa, 3 Las Vegas-style casinos offer slot machines and table games, such as craps, blackjack, and Texas hold 'em. In addition, students have access to lottery, horse- and dog-race betting, and a variety of online, illegal gambling activities. Proximity to gambling venues has been cited as a possible risk factor in the epidemiology of gambling among college students. Shaffer et al reported an association with the years worked at a casino and the prevalence of problem gambling.¹⁷ The issue of proximity has been questioned recently by Sévigny et al, whose data failed to support an association of problem gambling and proximity.¹⁸ Anecdotally, Creighton University pharmacy students on occasion have admitted to excessive participation in gambling as a negative factor in achieving academic success, prompting the authors to question the extent of gambling among the population of professional students. To our knowledge, an assessment of pharmacy students' experiences with gambling has not been reported. The purpose of this study was to determine the extent of gambling among our population of pharmacy students.

METHODS

Six-hundred fifty-eight Creighton University pharmacy students were sent an e-mail requesting their participation in an online survey (Websurveyor, VoVici, Dulles, VA) to identify the extent and characteristics of gambling, as well as other risky behaviors among participants. Investigators were blinded to the identity of the e-mail addresses of both responders and nonresponders. The e-mail as well as the survey instrument advised each student of the anonymity and confidentiality of survey results. E-mail reminders for nonresponders were sent automatically at weekly intervals for 4 consecutive weeks. Students were also encouraged to participate through in-class announcements, but were not provided class time to complete the

survey instrument. The survey instrument was a 28-item modified South Oaks Gambling Screen. Additional questions identified the student's year in school, age, gender, ethnicity, marital status, distance or campus pathway, estimated grade point average, and amount of disposable income. Survey responses were transferred to an Excel spreadsheet before analysis via SPSS, version 17.0 (SPSS, Chicago, IL). Student responses were separated into 2 groups, those who had gambled over the previous 12 months and those who had not. For statistical comparison, students who gambled were subdivided according to their SOGS score (SOGS score = 0 and ≥ 1). A logistic regression model was used to identify student characteristics that were significantly and independently associated with gambling. Larger sample sizes are required when modeling with logistic regression (as compared to linear regression) because the maximum likelihood estimates are used to calculate standard errors of the coefficients for hypothesis testing. For this reason the criteria of 50 cases per indicator variable was used to determine the appropriate number of student characteristics assessed.¹⁹ The student characteristics in the model included: age, gender, race, marital status, GPA, and substance use of tobacco, alcohol and/or marijuana. To assess the effect of gambling on student relationships, school performance, and gambling behavior (ie, the amount of money gambled and lost), chi-square analyses were conducted for each compared level (did not gamble, SOGS score = 0 and SOGS score ≥ 1). For the $R \times C$ chi-squares, effect on relationships and school performance, significant omnibus tests were followed with post hoc comparisons using a Bonferroni-adjusted alpha of $p < 0.017$. The remaining analyses were 2×2 chi-squares with Fisher exact tests reported. The project was approved by the Creighton University Institutional Review Board in accordance with the Declaration of Helsinki, prior to initiation.

RESULTS

Four hundred eighty-eight students (74.2%) submitted survey responses. Table 1 provides demographic characteristics of the responders. There was almost equal distribution among the 4 classes, and the ratio of female to male responders is reflective of the composition of each class, as are the ratios of white to non-white, and single to married responders. Additional subdivision of race was not included in order to preserve anonymity. Almost two-thirds (308, 63.1%) of participants, reported having gambled at least once during the previous 12 months. Seventy-one percent (220) of the participants who admitted to gambling scored a 0 on the screen, a value associated with casual or social gambling. Slightly more than a quarter (80, 25.9%) of the students who had gambled scored 1 or 2 points, a value associated with some degree

Table 1. Demographic Characteristics of Pharmacy Students Who Completed the South Oaks Gambling Screen (N = 488)^a

Characteristics	All Participants ^b
Age, mean (SD)	26.6 (6.2)
Gender, No. (%)	
Males	178 (36.6)
Females	309 (63.4)
Did not answer	1 (0.2)
Marital Status, No. (%)	
Single/divorced/widowed/separated	315 (64.5)
Married	173 (35.5)
Grade, No. (%)	
Freshman	137 (28.1)
Sophomore	118 (24.2)
Junior	126 (25.8)
Senior	107 (21.9)
Race, No. (%)	
White	383 (78.6)
Other	104 (21.3)
Did not answer	1 (0.2)
Annual Income, No. (%)	
Less than \$5000	111 (22.8)
\$5000 - \$10000	117 (24.1)
\$10000 - \$15000	58 (11.9)
\$15000 - \$20000	42 (8.6)
\$20000 - \$25000	32 (6.6)
≥ \$25000	126 (26)
Did not answer	2 (0.4)
Monthly Disposable Income, No. (%)	
< \$50	69 (14.2)
\$50 - \$200	212 (43.8)
\$200 - \$500	110 (22.7)
≥ \$500	93 (19.2)
Did not answer	4 (0.8)

^a 74.2% of the entire pharmacy school enrollment.

^b May not add to 100% due to rounding.

of risk for developing problem gambling. Three students scored 3 or 4 (probable problem gamblers) and 5 students (1%) scored 5 or more (probable pathological gamblers) with 15 being the highest possible score. Overall, 18% of all participants, 28.6% of gamblers, scored at least 1 point on the screen. Table 2 includes results of the logistic regression model which reliably distinguishes student characteristics associated with gambling ($p < .001$; Nagelkerke $R^2 = 0.129$). Student characteristics independently associated with gambling were age ($OR = 0.960$, $p = 0.026$), gender ($OR = 0.464$, $p = 0.001$), and marital status ($OR = 1.909$, $p = 0.006$). Specifically, male students were 2.2 times more likely to gamble, single students were 1.9 times more likely to gamble, and for each year under the mean age of 26.6 years, students were 1.04 more times likely to gamble. Use of tobacco, alcohol and marijuana among gamblers and non-gamblers is shown in Table 3. Signifi-

cant differences also existed with both the amount gambled in a single day (Table 4) and the amount lost over the previous 12 months. Twenty percent of gamblers reported having wagered \$100 or more in a single day. While 50% percent of probable problem and pathological gamblers (80% of probable pathological gamblers) admitted to having wagered \$1,000 or more in a single day, none of the 220 participants identified as casual gamblers admitted to wagering a similar amount. Compared to casual gamblers, those with a SOGS scores ≥ 1 , gambled ($p < 0.001$) and lost ($p < 0.001$) significantly more money than casual gamblers. Differences among casual and non-casual gamblers were also identified when asked what effect gambling had on their relationships with others. Gamblers with SOGS scores ≥ 1 were significantly more likely to report gambling had affected their relationships with others both negatively (Fisher's exact test, $p = 0.013$) and positively (Fisher exact test, $p = 0.007$) than casual gamblers.

Slot machines were the most common gambling venue cited, having been played by 65% of all participants during the previous 12 months. Five of 8 problem/pathological gamblers reported playing cards at a casino at least monthly, and 3 of the 8 reported playing on a weekly basis. All had SOGS scores in excess of 10.

DISCUSSION

Gambling was a common activity among the pharmacy students surveyed, 63% of participants reported gambling at least once in the previous 12 months. The majority of participants in the study can be classified as social or casual gamblers with SOGS scores of 0. The incidence of pathological gamblers (SOGS scores ≥ 5 , 1.02%) among this population was similar to that reported in the general adult population² and much less than that reported for college students in general.^{2,3-7,12} There is no clear reason for this difference. Students in our study were older than the undergraduate students in a previous study in which their younger age was associated with risk-taking behaviors. The level of perceived risk of problem gambling inversely correlates with the actual risk of problem gambling. A study of 302 undergraduate students revealed that almost 90% did not perceive that gambling could lead to serious problems.²⁰ Although we did not measure the perceived risk of gambling by our students, it may be greater than their undergraduate counterparts. In a study using the Gordon Personal Profile-Inventory, pharmacists and pharmacy students scored high on measures of cautiousness, a trait consistent with not taking chances, acting impulsively, or making hurried decisions.²¹ Logically, a profession that is represented by a population of cautious individuals would be less likely to participate in a high-risk behavior such as gambling.

Table 2. Comparison of Demographics and Responses of Pharmacy Students Who Completed the South Oaks Gambling Screen

	Non-Gambler	SOGS Score = 0 - 2	SOGS Score ≥ 3
n Participants	180 (36.9)	300 (61.5)	8 (1.6)
Age, mean (SD)	28 (6.6)	25.7 (5.7)	27.9 (7.3)
Gender, No. (%)			
Males	149 (82.8)	122 (40.8)	7 (87.5)
Females	131 (17.2)	177 (59.2)	1 (12.5)
Did not answer	0 (0.0)	1 (0.33)	0 (0.0)
Race, No. (%)			
White	136 (75.6)	245 (81.9)	4 (50)
Non-white	44 (24.4)	54 (19.1)	4 (50)
Did not answer	0 (0.0)	1 (0.33)	0 (0.0)
Grade, No. (%)			
Freshman	55 (30.6)	81 (27)	1 (12.5)
Sophomore	40 (22.2)	76 (25.3)	3 (37.5)
Junior	45 (25)	79 (26.3)	1 (12.5)
Senior	40 (22.2)	64 (21.3)	3 (37.5)
Marital Status, No. (%)			
Single/Divorced/Widowed/Separated	93 (51.7)	214 (71.3)	8 (100)
Married	87 (48.3)	86 (28.7)	0 (0.0)
What effect do you believe gambling has on your school work? No. (%)			
Positive	—	3 (1)	0 (0.0)
Negative	—	12 (4)	3 (37.5)
Neither	—	284 (95)	5 (62.5)
Did not answer	—	1 (0.3)	0 (0.0)
What effect does gambling have on your relationship with others? No. (%)			
Positive	—	21 (7)	0 (0.0)
Negative	—	10 (3.4)	4 (50)
Neither	—	267 (89.6)	4 (50)
Did not answer	—	2 (0.7)	0 (0.0)

Abbreviation: SOGS = South Oaks Gambling Screen

Two characteristics were identified that were consistent with pathological and problem gamblers reported previously in the literature: they were more likely to be male and single or divorced.^{4,7}

The incidence of problem gambling among pharmacy students responding to our survey is low in comparison to that of college students previously reported in the literature. That 18% of our students scored at least 1 point on the SOGS is noteworthy. Programs and educational materials aimed at preventing problem gambling by explaining the risks of gambling behavior to academic success, its potential social and professional consequences, and the symp-

toms of problem gambling may be worthwhile. Educators and counselors should also be aware of the possibility of comorbid disorders (depression, anxiety, and substance abuse disorders) among pathological gamblers.²² While all colleges and schools struggle with the problem of an expanding curriculum, the benefit of a short curriculum infusion program on students' knowledge and attitudes about gambling behaviors has been demonstrated.²³

This study is not without limitations. Having been conducted at one private Midwestern school of pharmacy, study findings cannot be generalized to other schools and colleges of pharmacy. As with any survey, the accuracy of

Table 3. Tobacco, Alcohol, and Marijuana Use Reported by Pharmacy Students Who Completed the South Oaks Gambling Screen

	Non-gambler (n = 179), No. (%)	SOGS score = 0 (n = 220), No. (%)	SOGS score ≥ 1 (n = 88), No. (%)
Used tobacco at least once/week	6 (22.2)	15 (55.6)	6 (22.2)
Used alcohol at least once/week	74 (34.9)	94 (44.3)	44 (20.8)
Used marijuana at least once in previous 12 months	3 (11.5)	12 (46.2)	11 (42.3)

Abbreviation: SOGS = South Oaks Gambling Screen

Table 4. Amounts Wagered and Lost by Pharmacy Students Who Completed the South Oaks Gambling Screen

	SOGS = 0, No. (%) ^a	SOGS ≥ 1, No. (%) ^b
How much is the most you have gambled during any one day?		
< \$50	166 (83.4)	33 (16.6)
\$50 - \$249	44 (56.4)	34 (43.6)
\$250 - \$499	7 (36.8)	12 (63.2)
\$500 - \$999	3 (42.9)	4 (57.1)
≥ \$1000	0 (0.0)	5 (100.0)
How much money have you lost gambling in any one day?		
None	61 (81.3)	14 (19.7)
< \$50	123 (82.6)	26 (17.4)
\$50 - \$249	31 (60.0)	21 (40.0)
\$250 - \$499	4 (25.0)	12 (75.0)
\$500 - \$999	1 (9.0)	10 (91.0)
≥ \$1000	0 (0.0)	5 (100.0)

Abbreviation: SOGS = South Oaks Gambling Screen

^a n = 220

^b n = 88

the results is limited by the truthfulness of the respondents. While we assured the participants of their anonymity, students may have chosen not to participate or may have provided false answers to survey questions out of fear of discovery. Despite these limitations, this research provides a first look into the extent of gambling within a pharmacy student population.

CONCLUSION

Casual/social gambling was identified as a common activity among pharmacy students in our study. Students who develop problem/pathological gambling were determined more likely to be male, and either single or divorced. Pharmacy school faculty should be aware of the prevalence of gambling addictions among students, consider ways to minimize the risk of aberrant gambling behavior, and implement procedures to help students with associated academic difficulty. While study results demonstrate that problem gambling among our pharmacy student population is low, this is the first study to document the prevalence of gambling in this population. Of interest would be the assessment of gambling among pharmacists and other health care professionals.

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