

Gambling among youths in Switzerland and its association with other addictive behaviours

A population-based study

Leonardo Tozzi, Christina Akre, Aline Fleury-Schubert, Joan-Carles Suris

Institute of Social and Preventive Medicine (IUMSP), Lausanne University Hospital, Switzerland

Summary

OBJECTIVE: To assess the prevalence of problem gambling in a population of youths in Switzerland and to determine its association with other potentially addictive behaviours.

METHODS: Cross-sectional survey including 1,102 participants in the first and second year of post-compulsory education, reporting gambling, socio-demographics, internet use and substance use. For three categories of gambling (nongambler; nonproblem gambler and at-risk/problem gambler), socio-demographic and addiction data were compared using a bivariate analysis. All significant variables were included in a multinomial logistic regression using nongamblers as the reference category.

RESULTS: The prevalence of gamblers was 37.48% (n = 413), with nonproblem gamblers being 31.94% (n = 352) and at-risk/problem gamblers 5.54% (n = 61). At the bivariate level, severity of gambling increased among adults (over 18 years) and among males, vocational students, participants not living with both parents and youths having a low socio-economic status. Gambling was also associated to the four addictive behaviours studied. At the multivariate level, risk of nonproblem gambling was increased in males, older youths, vocational students, participants of Swiss origin and alcohol misusers. Risk of at-risk/problem gambling was higher for males, older youths, alcohol misusers, participants not living with both parents and problem internet users.

CONCLUSIONS: One-third of youths in our sample had gambled in the previous year and gambling is associated with other addictive behaviours. Clinicians should screen their adolescent patients for gambling habits, especially if other addictive behaviours are present. Additionally, gambling should be included in prevention campaigns together with other addictive behaviours.

Key words: gambling; youth; addiction; internet; substance use

Introduction

Parents fear many of the activities that could lead their children to addictive behaviours, especially smoking or alcohol and drug misuse. Other risk behaviours, however, are also widespread but remain largely underestimated. Gambling falls into this category [1] and over the years it has become a common and socially accepted form of entertainment for youths. In fact, due to modern technologies such as web sites and electronic payment, it may even be more accessible today than ever before [2].

Even if playing for money in itself might be viewed as harmless recreation, the consequences of excessive gambling can be severe, as it can lead to both heavy economical loss and comorbidity with other addictive behaviours, such as substance abuse [2–6] and problem internet use [7, 8]. The matter is important, since the number of youths who have gambled in the past 12 months reported in other countries is strikingly high, such as in the United States (53%–68%) [2, 6], Australia (62.5%–81%) [9, 10], Canada (61%–81%) [3, 11, 12] and Norway (69.8%–78.5%) [13, 14]. Moreover, evidence suggests that youths are especially vulnerable to problem gambling [15, 16] and its prevalence has been shown to vary between 5% and 7% in youth populations across the globe [3, 7, 9, 11, 13, 17, 18], and even to be double the prevalence among adults [15].

Previous research on young adults in Switzerland found that almost half of them had gambled in the previous year, with 34.8% having gambled occasionally and 13.5% at least weekly [19]. The study, however, did not specifically investigate problem gambling, defined not only by its frequency but also by its social, economic and psychological implications on daily life [11].

In order to fill this gap and to understand the full extent of this phenomenon, the aim of our work was to assess the prevalence of problem gambling in a population of youths in Switzerland and to determine its association with other potentially addictive behaviours.

Methods

Between April and June 2011, we contacted the 3,969 students in the first and second year of post-compulsory education in the seven high and vocational schools of the canton of Neuchâtel, to invite them to participate in a survey online. In Switzerland, school is compulsory until 9th grade (15–16 years of age). Afterwards, about 30% of students attend high school, 60% vocational school (an apprenticeship where they have one or two days of school per week and work in a company on the remaining days) and 10% stop or delay their education. Potential participants were given a letter explaining the survey and indicating the address of the website where they could answer the questionnaire. Students could fill in the questionnaire online from any computer, whether at school or at home. The questionnaire had to be filled in all at once. To ensure single participation and to preserve anonymity, respondents had to create their own unique participation code based on the first letter of their first name, the last letter of their family name, the day and the month of their birth and the street number of their home (for example, John Smith, born on the 10 of June and living on 56 Main Street would become JH100656). Participants completing the questionnaire entered a prize draw. A total of 1,126 participants answered the survey with an overall response rate of 28.4%. The response rate was slightly higher in high schools (30.1%) than in vocational schools (26.6%), and there were no differences in the distribution of non-response between schools or among demographic groups. Among respondents, 3 refused to fill in the survey and 21 did not do so correctly. All 24 were therefore excluded and results are presented based on 1,102 participants.

The survey consisted of 52 questions (79 items) related to socio-demographics, schooling, gambling, internet use and substance use. The questionnaire could be completed in less than 15 minutes. The study protocol was approved by the Cantonal Ethical Commission on Human Research.

Gambling

Among respondents, 689 had not gambled in the previous 12 months and formed the “nongamblers” category. To evaluate gambling, we used the French version of the South Oaks gambling screen revised for adolescents (SOGS-RA) [20] adapted to our specific context by using 8 of the 12 original questions (Cronbachs’ alpha: 0.7). According to this scale, participants who had gambled in the previous 12 months were divided into “nonproblem gamblers” (SOGS-RA < 2; N = 352), “at-risk gamblers” (SOGS-RA = 2–4; N = 47) and “problem gamblers” (SOGSRA ≥ 4; N = 14). Due to the small number of at-risk and problem gamblers, we combined them to form the category “at-risk/problem gamblers”.

Other potentially addictive behaviours

To evaluate problematic internet use, we used the French version of the Internet Addiction Test (IAT) [21] and considered a score > 49 as positive.

Questions investigating the use of various substances were taken from the SMASH2002 survey [22]. Smoking, cannabis use and the use of other illegal drugs (glues, nonpre-

scribed medicine / tranquilizers, ecstasy/stimulants, LSD / hallucinogenic mushrooms, GHB, cocaine/crack, heroin, methadone) were defined as at least one use in the 30 days before the study. Alcohol misuse was defined as at least one episode of drunkenness in the same period (labelled as “have you been drunk in the previous 30 days”).

Additionally, we also checked for socio-demographic and academic variables described in the literature as potential confounders [23–25], such as age, family structure (parents living together / other), family socio-economic status, and nationality (Swiss-born/other). The age range of the sample was 15–20 years, and we divided them into minors (<18 years) and adults (>18 years) because it corresponds to the age at which they are legally allowed in gambling places, such as casinos, in Switzerland. We used a question from the European School Survey Project on Alcohol and other Drugs (ESPAD) survey [26] to assess family socio-economic status: “In comparison to other Swiss families, you find your financial situation to be...” with 7 possible answers ranging from “very much better off” to “very much less well off” which were then classified as “above average”, “average” and “below average”. Academically, participants were checked for academic track (high school / vocational school) and school grades. To assess school grades we used the question “I have good grades at school” with four possible answers: completely agree; completely agree, quite agree; quite disagree; totally disagree. We divided the answers into good (completely/quite agree) and poor (completely/quite disagree) grades.

Statistical analysis

Socio-demographic, academic and addiction data for the three categories of gambling were compared at the bivariate level using the Pearson chi-square test. All significant variables were then included in a multinomial logistic regression using nongamblers as the reference category. Results are reported as relative risk ratios (RRR) with 95% confidence intervals (95% CI). All analyses were conducted with the STATA12 software (StataCorp, College Station, Texas, USA), with a significance level of 0.05.

Table 1: Description of the study population (n = 1102).

Characteristic	Percentage (n)
Gender	
males	48.73% (537)
females	51.27% (565)
Age	
<18 years	73.68% (812)
18+ years	26.32% (290)
Academic track	
high school	35.03% (386)
vocational school	64.97% (716)
School grades	
good	81.49% (898)
poor	18.51% (204)
Family structure	
parents together	66.79% (736)
other	33.21% (366)
Socioeconomic status	
high	26.68% (294)
average	61.52% (678)
low	11.80% (130)
Nationality	
Swiss	89.82% (990)
other	10.18% (112)
Internet Addiction Test	
<50	94.37% (1040)
>49	5.63% (62)
Smoking	
yes	37.11% (409)
no	62.89% (693)
Alcohol misuse	
yes	32.49% (358)
no	67.51% (744)
Cannabis use	
yes	20.42% (225)
no	79.58% (877)
Use of other illegal drugs	
yes	10.34% (114)
no	89.66% (988)

Results

A description of the sample can be found in table 1. The prevalence of youths having gambled in the past 12 months was 37.48% (n = 413; 95% CI: 34.62–40.34), with non-problem gamblers representing 31.94% of the sample (n = 352; 95% CI: 29.19–34.69) and at risk/problem gamblers 5.54% (n = 61; 95% CI: 4.19–6.89).

Bivariate analysis

The severity of gambling increased significantly among students aged 18 years and above and among males, vocational students, those not living with both parents and those having a low socio-economic status. Gambling was also associated with the four addictive behaviours studied.

Gambling rates showed an inverted U-shaped curve based on nationality: participants of Swiss origin were least represented in the nongamblers and in the at-risk/problem gamblers categories compared with nonproblem gamblers (table 2).

With the exception of school grades, all variables were found to be statistically significant and were included in the multivariate analysis.

Multivariate analysis

Multinomial logistic regression using nongamblers as the reference category showed an increased risk of nonproblem gambling for males (RRR = 1.68, 95% CI: 1.27–2.21), older youths (RRR = 1.56, 95% CI: 1.14–2.14), vocational students (RRR = 1.68, 95% CI: 1.24–2.29), participants of Swiss origin (RRR = 1.74, 95% CI: 1.05–2.88) and alcohol misusers (RRR = 1.39, 95% CI: 1.02–1.90).

Risk/problem gambling was also higher for males (RRR = 5.51, 95% CI: 2.61–11.62), older youths (RRR = 1.95, 95% CI: 1.02–3.73) and alcohol misusers (RRR = 3.27, 95% CI: 1.68–6.37), as well as for participants not living with both parents (RRR = 1.90, 95% CI: 1.03–3.51) and problem internet users (RRR = 9.41, 95% CI: 4.18–21.17) (table 3).

Table 2: Bivariate comparison of nongamblers, nonproblem gamblers and at-risk/problem gamblers.

	Nongamblers (n = 689)	Nonproblem gamblers (n = 352)	At-risk/ problem gamblers (n = 61)	p- value
	Percentage (n)	Percentage (n)	Percentage (n)	
Sex (male)	43.98% (303)	60.23% (212)	81.97% (50)	<0.01
Age (>17 years)	21.77% (150)	32.39% (114)	42.62% (26)	<0.01
Academic track (vocational school)	58.06% (400)	75.28% (265)	83.61% (51)	<0.01
School grades (poor)	20.03% (138)	15.34% (54)	19.67% (12)	NS
Family structure (other)	29.61% (204)	36.65% (129)	54.10% (33)	<0.01
Socio-economic status		29.26% (103)	18.03% (11)	
high	64.44% (444)	56.53% (199)	57.38% (35)	<0.01
average	9.43% (65)	14.20% (50)	24.59% (15)	
low				
Nationality (Swiss born)	88.66% (611)	93.16% (328)	83.61% (51)	<0.05
Internet Addiction Test (>49)	4.06% (28)	5.11% (18)	26.23% (16)	<0.01
Smoking (yes)	30.91% (213)	45.45% (160)	59.02% (36)	<0.01
Alcohol misuse (yes)	25.98% (179)	39.20% (138)	67.21% (41)	<0.01
Cannabis use (yes)	14.95% (103)	26.42% (93)	47.54% (29)	<0.01
Use of other drugs (yes)	8.71% (60)	12.22% (43)	18.03% (11)	<0.05

Table 3: Multinomial logistic regression using nongamblers as reference category.

	Non problem gamblers		At risk/problem gamblers	
	RRR	95% CI	RRR	95% CI
Sex (male)	1.68**	1.27–2.21	5.51**	2.61–11.62
Age (>17 years)	1.56**	1.14–2.14	1.95*	1.02–3.73
Academic track (vocational school)	1.68**	1.24–2.29	1.68	0.79–3.61
Family structure (other)	1.16	0.86–1.56	1.90*	1.03–3.51
Socio-economic status (high)	1.33	0.95–1.81	0.84	0.39–1.81
Socio-economic status (average)	1		1	
Socio-economic status (low)	1.36	0.88–2.12	1.56	0.72–3.35
Nationality (Swiss born)	1.74*	1.05–2.88	0.60	0.25–1.42
Internet Addiction Test (>49)	1.21	0.64–2.29	9.41**	4.18–21.17
Smoking (yes)	1.27	0.91–1.75	1.18	0.57–2.42
Alcohol misuse (yes)	1.39*	1.02–1.90	3.27**	1.68–6.37
Cannabis use (yes)	1.20	0.82–1.76	2.03	0.97–4.25
Use of other drugs (yes)	1.19	0.76–1.87	1.03	0.43–2.43

RRR = relative risk ratio; 95% CI = 95% confidence interval
* p < 0.05; ** p < 0.01

Discussion

In our sample, 37.48% of participants reported gambling in the past 12 months and 5.54% fit into the category “at-risk/problem gamblers” according to the SOGS-RA score. These data confirm the fact that gambling, both nonproblem and problem, is relatively widespread among a sample of young people in Switzerland.

Interestingly, the number of youths found to have a gambling habit in our study was lower than reported in other countries [2–10], but the overall prevalence of at-risk/problem gamblers was very similar. This finding is worrying as it suggests a higher ratio of at-risk/problem individuals among adolescent gamblers living in Switzerland than in other developed countries.

Consistent with previous studies, we also showed a higher prevalence of gambling in males [13] and older participants

[23]. The gender difference could be explained by increased risk-taking behaviours in males [27] or by social and cultural factors [28]. The increase when reaching majority is probably due to the law forbidding minors' access to gambling environments such as casinos, to increased income, and to easier access to money, for example through credit cards.

Regarding the role of education, apprentices were found to be more likely to develop a nonproblem gambling habit. The reason for this difference might be the income provided by their apprenticeship. We found no differences in academic results, whereas other studies were able to confirm significantly lower grades in gamblers and at-risk/problem gamblers [22]. This difference might be due to the different academic tracks considered in our study, where students in high school are usually more academically gifted than those attending vocational school.

Although socio-economic status was not associated with gambling in the multivariate analysis, in our data at-risk/problem gambling was more frequent among children not living with both parents. This result is consistent with other studies [22] and could be related to the socio-economic disadvantages or the lower parental monitoring of such situations.

Our finding of higher gambling prevalence among problem internet users and alcohol misusers is also consistent with previous studies [3, 26]. In particular, in our study internet addiction was associated with a high rate of at-risk/problem gambling only. This result might be due to the fact that at-risk/problem gamblers have higher chances of gambling online [26].

Smoking, cannabis and other illegal drug use were found to be significant variables at the bivariate, but not at the multivariate, level. This finding is not consistent with other studies [3], which reported them as significant in both cases. However, a previous Swiss study [19] also found no relationship of gambling with the use of cannabis or other illegal drugs. The lack of smoking gamblers in our study might be due to different smoking limitation policies in gambling environments. However, the relationship between at-risk/problem gambling and illegal drug use should be further investigated.

To our knowledge, the present study is the first one to investigate the prevalence of at-risk/problem gambling in a youth population in Switzerland and to assess its co-morbidity with other addictive behaviours.

However, it has some limitations that need to be stressed. First of all, the cross-sectional nature of the study does not allow us to determine causality. Second, the response rate was low (28.4%) and because of this the extent of the problem could be underestimated. Third, our results are based on only one canton and their generalisation to the whole of Switzerland is not warranted. Finally, the survey answers were self-reported. However, the fact that the questionnaire was anonymous should minimise this possible bias.

Nevertheless, several recommendations can be made on the basis of our results. At the general population level, it would be important to provide more information about gambling and problem gambling among youths, since the risks involved seem to be largely underestimated [1]. This information should specifically target parents. If they were

well aware of the phenomenon they could better monitor their children's gambling behaviours.

From a clinical standpoint, and considering the extent of the problem, health professionals dealing with youths should include gambling in their basic screening, especially if other addiction behaviours such as problem internet use or alcohol misuse are present.

Moreover, due to its frequent association with other addictive behaviours, information on gambling should be included in prevention campaigns dealing with tobacco, alcohol and illegal substances. Specific interventions targeting at risk populations of youths should also be envisaged.

Finally, our results represent only a snapshot of the situation, and we do not know for which youths gambling will continue to be a problem and for which ones it will turn out to be an exploratory behaviour, as suggested by the lower rate of problem gamblers among adults [15]. Longitudinal studies are needed in order to assess this phenomenon in larger and more widely representative populations.

Funding / potential competing interests: This research was financed by the Programme Intercantonal de Lutte contre la Dépendance au Jeu (PILDJ).

Correspondence: Professor Joan-Carles Suris, MD, PhD, Institute of Social and Preventive Medicine (IUMSP), Lausanne University Hospital, Biopôle 2, Route de la Corniche 10, CH1010 Lausanne, Switzerland, [joan-carles.suris\[at\]chuv.ch](mailto:joan-carles.suris[at]chuv.ch)

References

- Campbell CA, Derevensky JL, Meerkamper E, Cutajar J. The Influence of Cultural Background on Parental Perceptions of Adolescent Gambling Behaviour: A Canadian Study. *International Journal of Mental Health and Addiction*. 2012;10(4):537–50.
- Proimos J, DuRant RH, Pierce JD, Goodman E. Gambling and other risk behaviors among 8th- to 12th-grade students. *Pediatrics*. 1998;102(2):e23.
- Hardoon KK, Gupta R, Derevensky JL. Psychosocial variables associated with adolescent gambling. *Psychol Addict Behav*. 2004;18(2):170–9.
- Lynch WJ, Maciejewski PK, Potenza MN. Psychiatric correlates of gambling in adolescents and young adults grouped by age at gambling onset. *Arch Gen Psychiatry*. 2004;61(11):1116–22.
- Martins SS, Storr CL, Ialongo NS, Chilcoat HD. Mental health and gambling in urban female adolescents. *J Adolesc Health*. 2007;40(5):463–5.
- Barnes GM, Welte JW, Hoffman JH, Tidwell MC. The co-occurrence of gambling with substance use and conduct disorder among youth in the United States. *Am J Addict*. 2011;20(2):166–73.
- Villella C, Martinotti G, Di Nicola M, Cassano M, La Torre G, Gliubizzi MD, et al. Behavioural addictions in adolescents and young adults: results from a prevalence study. *J Gambl Stud*. 2011;27(2):203–14.
- Tsitsika A, Critselis E, Janikian M, Kormas G, Kafetzis DA. Association Between Internet Gambling and Problematic Internet Use Among Adolescents. *J Gambl Stud*. 2011;27:389–400.
- Splevins K, Mireskandari S, Clayton K, Blaszczyński A. Prevalence of adolescent problem gambling, related harms and help-seeking behaviours among an Australian population. *J Gambl Stud*. 2010;26(2):189–204.
- Delfabbro P, Thrupp L. The social determinants of youth gambling in South Australian adolescents. *J Adolesc*. 2003;26(3):313–30.

- 11 Boudreau B, Poulin C. The South Oaks Gambling Screen-revised Adolescent (SOGS-RA) revisited: a cut-point analysis. *J Gambl Stud.* 2007;23(3):299–308.
- 12 Lussier I, Derevensky JL, Gupta R, Bergevin T, Ellenbogen S. Youth gambling behaviors: an examination of the role of resilience. *Psychol Addict Behav.* 2007;21(2):165–73.
- 13 Johansson A, Gotestam KG. Gambling and problematic gambling with money among Norwegian youth (12–18 years). *Nord J Psychiatry.* 2003;57(4):317–21.
- 14 Hansen M, Rossow I. Adolescent gambling and problem gambling: does the total consumption model apply? *J Gambl Stud.* 2008;24(2):135–49.
- 15 Griffiths M, Wood RT. Risk factors in adolescence: the case of gambling, videogame playing, and the internet. *J Gambl Stud.* 2000;16(2-3):199–225.
- 16 Shaffer HJ, Korn DA. Gambling and related mental disorders: a public health analysis. *Annu Rev Public Health.* 2002;23:171–212.
- 17 Fisher S. A Prevalence Study of Gambling and Problem Gambling in British Adolescents. *Addiction Research and Theory.* 1999;7(6):509–38.
- 18 Welte JW, Barnes GM, Tidwell MC, Hoffman JH. Association between problem gambling and conduct disorder in a national survey of adolescents and young adults in the United States. *J Adolesc Health.* 2009;45(4):396–401.
- 19 Luder MT, Berchtold A, Akre C, Michaud PA, Suris JC. Do youths gamble? You bet! A Swiss population-based study. *Swiss Med Wkly.* 2010;140:w13074.
- 20 Winters KC, Stinchfield RD, Fulkerson J. Toward the development of an adolescent gambling problem severity scale *Journal of Gambling Studies* 1993;9(1):63–84.
- 21 Khazaal Y, Billieux J, Thorens G, Khan R, Louati Y, Scarlatti E, et al. French validation of the internet addiction test. *Cyberpsychol Behav.* 2008;11(6):703–6.
- 22 Narring F, Tschumper A, Inderwildi BL, Jeannin A, Addor V, Butikofer A. Santé et styles de vie des adolescents âgés de 16 à 20 ans en Suisse (2002). Lausanne: Institut Universitaire de Médecine Sociale et Préventive. 2004.
- 23 Yip SW, Desai RA, Steinberg MA, Rugle L, Cavallo DA, Krishnan-Sarin S, et al. Health/functioning characteristics, gambling behaviors, and gambling-related motivations in adolescents stratified by gambling problem severity: findings from a high school survey. *Am J Addict.* 2011;20(6):495–508.
- 24 Barnes GM, Welte JW, Hoffman JH, Tidwell MC. Gambling, alcohol, and other substance use among youth in the United States. *J Stud Alcohol Drugs.* 2009;70(1):134–42.
- 25 Yen JY, Yen CF, Chen CC, Chen SH, Ko CH. Family factors of internet addiction and substance use experience in Taiwanese adolescents. *Cyberpsychol Behav.* 2007;10(3):323–9.
- 26 Hibell B, Andersson B, Bjarnason T, Ahlström S, Balakireva O, Kokkevi A. ESPAD report 2003. Alcohol and other drug use among students in 35 European countries. Stockholm: The Swedish Council for Information on Alcohol and other Drugs. 2004.
- 27 Steinberg L. A Social Neuroscience Perspective on Adolescent Risk-Taking. *Dev Rev.* 2008;28(1):78–106.
- 28 Brezing C, Derevensky JL, Potenza MN. Non-Substance-Addictive Behaviours in Youth: Pathological Gambling and Problematic Internet Use. *Child & Adolescent Psychiatric Clinics of North America* 2010;19:625–41.