Original Research

A National Survey of Gambling Problems in Canada

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Objective: The 1990s saw widespread expansion of new forms of legalized gambling involving video lottery terminals (VLTs) in community settings (that is, in bars and restaurant lounges) and permanent casinos in several Canadian provinces. To date, there has never been a national survey of gambling problems with representative interprovincial data. Using a new survey, we sought to compare prevalence figures across the 10 Canadian provinces.

Method: Using the Canadian Problem Gambling Index, we investigated the current 12-month prevalence of gambling problems in the Canadian Community Health Survey: Cycle 1.2—Mental Health and Well-Being, in which a random sample of 34 770 community-dwelling respondents aged 15 years and over were interviewed. The response rate was 77%. The data are representative at the provincial level and were compared with the availability of VLTs per 1000 population and with the presence of permanent casinos for each province.

Results: Manitoba (2.9%) and Saskatchewan (also 2.9%) had the highest prevalence of gambling problems (specifically, moderate and severe problem levels combined). These 2 provinces had significantly higher levels than the 2 provinces with the lowest prevalence of gambling problems: Quebec (1.7%) and New Brunswick (1.5%).

Conclusions: The 12-month prevalence of gambling problems in Canada was 2.0%, with interprovincial variability. The highest prevalence emerged in areas with high concentrations of VLTs in the community combined with permanent casinos. These findings support earlier predictions that the rapid and prolific expansion of new forms of legalized gambling in many regions of the country would be associated with a considerable public health cost.

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Clinical Implications

- Problem gambling is a common mental health concern in several parts of Canada.
- There is substantial interprovincial variability in rates of problem gambling in Canada.
- A higher prevalence of gambling problems is observed in regions with both permanent casinos and high concentrations of video lottery terminals in the community.

Limitations

- The cross-sectional design of the survey cannot identify changes over time.

Key Words: *problem gambling, prevalence*

In several Canadian provinces, the 1990s saw widespread expansion in the number and types of legalized gambling (1,2). Among other factors, increased availability of legalized gambling has been associated with increased rates of gambling problems in the general population (3,4). Although Canadian policy-makers recognize that a social cost accompanies the financial revenues of gambling expansion, there has never been a nationwide, interprovincial survey of gambling problems. From a public health perspective, we need accurate data from national community surveys to plan

education, prevention, and treatment services (2,4). Electronic gambling machines, or video lottery terminals (VLTs), are a new type of legalized gambling introduced in several Canadian provinces in the last decade. Recent findings from epidemiologic (5–8) and clinical (9,10) studies suggest that VLTs are strongly associated with the likelihood of disordered gambling. Some provinces have deployed large numbers of VLTs over many locations in bars and restaurant lounges, and this represents a high concentration of community exposure to a novel form of gambling that has been particularly associated with gambling problems. Other provinces have confined the availability of machines ("slots") to only a few casino settings.

An interprovincial survey of gambling problems provides an opportunity to gauge the correlates of gambling exposure, because gambling expansion has varied considerably across Canada. At one end of the spectrum are provinces such as Manitoba, Saskatchewan, and Alberta, which have both a high per capita concentration of VLTs in the community and large permanent casinos located mainly in urban settings. Manitoba opened Canada's first permanent casino in 1989. By 1999–2000, with a population of only 1.1 million people, the province had almost 4500 VLTs in more than 560 locations, in addition to 2 permanent casinos (11,12). At the more conservative end of the spectrum, British Columbia and Ontario have restricted gambling expansion to the development of permanent casinos and have so far rejected the idea of widespread deployment of VLTs in community settings.

Our study aimed to determine the current (that is, 12-month) prevalence of gambling problems in the first national survey in Canada with representative interprovincial data. In this regard, the Canadian Community Health Survey Cycle 1.2—Mental Health and Well-being (CCHS 1.2, 13) is a landmark epidemiologic endeavour. The CCHS 1.2 was a large, nationwide, household interview survey with a random sample of more than 30 000 Canadian residents. It employed a sophisticated sampling design with trained professional interviewers, and it managed to obtain an impressive 77% response rate (14). The CCHS 1.2 included the new Canadian Problem Gambling Inventory (CPGI, 15), which was specifically developed for use in epidemiologic surveys. It was hypothesized that the highest rates of gambling problems would be observed in provinces that had relatively large concentrations of VLTs per capita, compared with other provinces, and that also operated permanent casinos.

Method

Sample

Participants were community-dwelling respondents from the CCHS 1.2. In 2002, Canadian residents aged 15 years and older in 10 provinces were randomly selected according to a multistage stratified cluster design (13). The response rate was 77%, and the data are representative of the general population of Canada at the provincial level (14). A sample size of 34 770 was used for this investigation.

In the CCHS 1.2, the overall rate of gambling participation in 2002 was 76%, with little interprovincial variability (16). Rates were as follows: Alberta, 72%; Manitoba, 74%; British Columbia, Newfoundland and Labrador, Ontario, and Prince Edward Island, 75%; New Brunswick and Saskatchewan, 76%; Nova Scotia, 78%; and Quebec, 79%.

Measures and Procedure

Statistics Canada designed the CCHS 1.2 under the provisions set out in the federal Statistics Act. A detailed description of the selection method for household interviews is reported elsewhere (13). Statistics Canada relied on professional interviewers who received additional training to increase their sensitivity to mental health issues (13). All survey participants were informed about the nature of the questions before they were asked whether they consented to participate. The interviews were mainly conducted in person; telephone interviews were only conducted in a few cases where need to travel, lack of access, or respondent preference indicated. Participants were explicitly informed about privacy, confidentiality, security, and the voluntary nature of the survey; 94% (17) agreed that the information they provided could be shared for research purposes.

The Canadian Problem Gambling Index (CPGI, 15) was used to assess 12-month prevalence of problem gambling. The CPGI is a 9-item instrument that assesses several domains of gambling problems, including guilt or anxiety, criticism from other people, financial problems, and chasing previous losses. Developers of the CPGI divided scores into 4 categories (0, 1 to 2, 3 to 7, and 8 or over) to indicate increasing levels of gambling problems (15). The 3-to-7 level is believed to denote a significant risk. It may be associated with heavy gambling and correlates of gambling problems, and it may or may not yet be accompanied by adverse consequences from gambling (15). The 8-or-over level is believed to represent the most extreme group, those who have experienced adverse consequences from gambling and might have lost control of their behaviour (15). Epidemiologic researchers have used the 2 highest levels to indicate moderate and severe problem gambling (18). We adopted this approach in our study and combined gamblers with moderate and severe problems into a single category to denote gambling problems, which served as the main study variable. For information purposes, Table 1 presents a breakdown of gambling problems into moderate and severe levels. We assessed the extent of gambling activities in each province by recording the number of VLTs per 1000 population and the

Table 1 Breakdown of level of gambling problems for each Canadian province

Province	Gambling problems (%)[a]		
	Total	Moderate	Severe[a]
Manitoba	2.9	2.3	0.6
Saskatchewan	2.9	1.9	1.0
Alberta	2.2	1.7	0.5
Nova Scotia	2.0	1.1	0.9
Ontario	2.0	1.6	0.4
Newfoundland	1.9	1.4	0.5
Prince Edward Island	1.9	1.4	0.5
British Columbia	1.9	1.4	0.5
Quebec	1.7	1.3	0.4
New Brunswick	1.5	1.1	0.4

[a]Estimates of severe problems only were obtained by subtracting the moderate column from the total column. Because of the small sample sizes for severe problems only, bootstrapped results are not reported: some of the coefficient of variation values exceeded the 33.3% cut-off recommended by Statistics Canada. All the other prevalence figures were bootstrapped.

Table 2 Prevalence of gambling problems, number of video lottery terminals (VLTs) per 1000 population, and presence of permanent casinos for each Canadian province

Province	Gambling problems (%)	VLTs per 1000 population	Presence of permanent casinos
Manitoba	2.9	5.3	Yes
Saskatchewan	2.9	4.8	Yes
Alberta	2.2	2.8	Yes
Nova Scotia	2.0	4.5	Yes
Ontario	2.0	0.0	Yes
Newfoundland	1.9	6.2	No
Prince Edward Island	1.9	4.1	No
British Columbia	1.9	0.0	Yes
Quebec	1.7	2.7	Yes
New Brunswick	1.5	4.9	No

Information on the number of VLTs per 1000 population and the presence of casinos was derived from published reports from Canada West Foundation (12) and KPMG (19), respectively.

presence of permanent casinos, using information compiled in publicly available reports (12,19).

Statistical Analysis

We applied the appropriate statistical weight to the data for all analyses. The complex sampling design of the CCHS requires a bootstrapping method to account for variance estimates (20). We therefore employed a bootstrapping technique for the prevalence figures that incorporated sampling information provided by Statistics Canada to produce the coefficient of variation (CV) and 95% confidence intervals (CIs). We conducted pairwise proportion contrasts among the provinces to determine whether there were significant differences among interprovincial prevalence figures.

Results

The current 12-month prevalence of gambling problems in Canada was 2.0%. Table 1 presents the 12-month prevalence figures for each province. Prevalence of gambling problems ranged from a high of 2.9% in Manitoba and Saskatchewan to a low of 1.5% in New Brunswick.Table 2 presents information on the number of VLTs per 1000 population and on the presence of permanent casinos.

We used pairwise proportion contrasts to compare prevalence rates for all the provinces. Significant differences at the 95%CI were only found between the 2 provinces with the highest prevalence of gambling problems (Manitoba and Saskatchewan), compared with the 2 provinces having the lowest levels of gambling problems (Quebec and New Brunswick).

Discussion

This nationally representative survey of almost 35 000 community residents found the current 12-month prevalence of gambling problems in Canada to be 2.0%. However, there was interprovincial variability in prevalence figures across the

country. Manitoba and Saskatchewan, the 2 provinces with the highest rates of gambling problems (2.9%), had significantly greater levels than did the 2 provinces with the lowest rates of gambling problems: Quebec (1.7%) and New Brunswick (1.5%).

An interprovincial breakdown of problem gambling rates and the extent of availability of new forms of legalized gambling activity (that is, VLTs and casinos) provided support for the hypothesis that the highest rates of gambling problems would be observed in provinces with the highest concentrations of VLTs in the community in addition to the presence of permanent casinos. Four of the 5 provinces that had both VLTs and casinos produced the 4 highest prevalence figures for gambling problems in the country. The 2 provinces with permanent casinos but no VLTs in the community (Ontario and British Columbia) ranked fifth (tied rank) and eighth out of 10, respectively, on prevalence of gambling problems. One province (Quebec) had both VLTs and casinos and yet was associated with a low rate of gambling problems. In this case, it is important to note that, of the provinces that allow VLTs, Quebec also had the smallest concentration of VLTs per 1000 population. One province (Newfoundland) had a high concentration of VLTs, compared with other provinces, yet only ranked sixth (tied rank) out of 10 on prevalence of gambling problems. This may be related to the fact that Newfoundland does not have permanent casinos in addition to VLTs, as do some other provinces.

In general, the empirical findings from this study underscore earlier public health concerns (1) about the social costs likely to accompany the rapid and prolific expansion of new forms of legalized gambling in many regions of the country. Although the widespread introduction of VLTs and permanent casinos in Canada began more than 10 years ago, there has never been a nationwide household survey of gambling problems until now. The large representative sample and high response rate achieved by Statistics Canada in the CCHS 1.2 survey provides a valuable new source of information on the extent of gambling problems across the different provinces in Canada. These findings offer important information for policy-makers and public health planners. Specifically, high concentrations of gambling availability in the community are associated with higher rates of gambling addiction. The identified pattern of increased prevalence of gambling problems associated with increased gambling availability (exposure) observed in our study also makes a significant contribution to the emerging international knowledge base on the nature of disordered gambling (3,4).

The interprovincial differences in the availability of legalized gambling and in rates of gambling problems allow a detailed examination of this public health issue. An avenue for future research would be to further compare the 2 provinces having significantly higher rates of gambling problems (Manitoba and Saskatchewan) with the 2 provinces having significantly lower problem gambling rates (Quebec and New Brunswick) to identify potential characteristics that may denote harmful vs protective factors. In addition to investigating the impact of high concentrations of VLTs in communities where permanent casinos already exist, researchers could also further explore the casinos' nature and location. For example, Montreal, Quebec, with a population of approximately 3.5 million people, has a single casino in a relatively isolated setting. It is located on an uninhabited island across from the downtown area and is only accessible by a roadway bridge. In contrast, Winnipeg, Manitoba, with a population of only 670 000 people, has 2 permanent casinos located in 2 of the largest working-class areas of the city.

One of the limitations of the CCHS 1.2 is that it employed only the new CPGI to assess gambling problems and did not include the more traditional South Oaks Gambling Screen (SOGS, 21) used in many older US and Canadian studies. It is therefore difficult to directly compare the results of the current investigation with findings from other studies, although the CPGI and SOGS have been found to be highly correlated (15). In addition to the choice of assessment instrument, many previous studies have used telephone surveys and have had lower response rates than the high response rate achieved with the mainly in-person interviews used in the CCHS.

A second limitation of the CCHS 1.2 is that it was a cross-sectional mental health survey. It is therefore not possible to make causal inferences about gambling expansion and increases in rates of gambling problems in this study. The CCHS 1.2 used lay interviews, and it is not known how many respondents would have received a psychiatric diagnosis of pathological gambling, either currently or at some point in the future (although, for public health planning and prevention purposes, many researchers focus on emerging gambling problems rather than on more end-stage extreme pathological gambling). A similar argument can be applied to our decision to combine moderate and severe levels into a single gambling problems classification. Further population-based studies and longitudinal research are needed to better understand the meaning of the CPGI categories. Finally, our study results are based on a macrolevel analysis, and there is a need for further research on the relation between the characteristics of VLTs, duration of exposure, and other more specific variables and the associated likelihood of gambling problems. For example, Alberta and Quebec had similar ratios of VLT availability, and both had casinos, yet the VLTs and casinos were associated with relatively higher and lower (albeit not significantly different) prevalence figures. It is hoped that the findings presented here emphasize the need for such future studies and

also add support for the calls to foster a national research agenda on gambling problems in Canada (1).

Note

We also examined a subsample of young people below the age of majority as an ancillary analysis. Respondents were aged 15 to 17 years or 15 to 18 years, depending on the province. The bootstrapped prevalence of 12-month gambling problems was 1.6% (n = 1811). The breakdown of severe problem and moderate problem levels was 0.2% and 1.4%, respectively. Bootstrapping analysis could not be performed separately on moderate and severe levels because of the small size of these subsamples.

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Un sondage national sur les problèmes de jeu au Canada

Objectif : Dans les années 1990, il y a eu une expansion généralisée de nouvelles formes de jeu légalisé, y compris des appareils de loterie vidéo (ALV) dans des cadres communautaires (c'est-à-dire, des bars et des salons-bars de restaurants) ainsi que des casinos à demeure dans plusieurs provinces canadiennes. Jusqu'ici, il n'y a jamais eu de sondage national sur les problèmes de jeu avec des données interprovinciales représentatives. À l'aide d'un nouveau sondage, nous avons cherché à comparer les chiffres de prévalence des 10 provinces canadiennes.

Méthode : Au moyen du questionnaire canadien des problèmes de jeu, nous avons recherché la prévalence actuelle sur 12 mois des problèmes de jeu de l'Enquête sur la santé dans les collectivités canadiennes : Cycle 1.2 — Santé mentale et bien-être. Un échantillon aléatoire de 34 770 répondants résidant dans la collectivité, âgés de 15 ans et plus ont été interviewés. Le taux de réponse a été de 77 %. Les données sont représentatives à l'échelle provinciale et ont été comparées avec la disponibilité des ALV par 1 000 habitants, et avec la présence de casinos à demeure dans chaque province.

Résultats : Le Manitoba (à 2,9 %) et la Saskatchewan (aussi à 2,9 %) avaient la prévalence la plus élevée de problèmes de jeu (spécifiquement, des niveaux de problèmes modérés et graves, combinés). Ces 2 provinces avaient des taux significativement plus élevés que les 2 provinces ayant la prévalence la plus faible de problèmes de jeu (Québec, 1,7 %; Nouveau-Brunswick, 1,5 %).

Conclusions : La prévalence sur 12 mois des problèmes de jeu au Canada était de 2,0 %, avec variabilité interprovinciale. La prévalence la plus élevée se constatait dans les régions avec de fortes concentrations d'ALV dans la collectivité, combinées avec les casinos à demeure. Ces résultats soutiennent les prédictions antérieures (1) selon lesquelles l'expansion rapide et prolifique de nouvelles formes de jeu légalisé, dans de nombreuses régions du pays, serait associée à un coût considérable de santé publique.