

The Relationship between Problem Gambling and Mental and Physical Health Correlates among a Nationally Representative Sample of Canadian Women

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ABSTRACT

Objectives: Gambling has become an increasingly common activity among women since the widespread growth of the gambling industry. Currently, our knowledge of the relationship between problem gambling among women and mental and physical correlates is limited. Therefore, important relationships between problem gambling and health and functioning, mental disorders, physical health conditions, and help-seeking behaviours among women were examined using a nationally representative Canadian sample.

Methods: Data were from the nationally representative Canadian Community Health Survey Cycle 1.2 (CCHS 1.2; n=10,056 women aged 15 years and older; data collected in 2002). The statistical analysis included binary logistic regression, multinomial logistic regression, and linear regression models.

Results: Past 12-month problem gambling was associated with a significantly higher probability of current lower general health, suicidal ideation and attempts, decreased psychological well-being, increased distress, depression, mania, panic attacks, social phobia, agoraphobia, alcohol dependence, any mental disorder, comorbidity of mental disorders, chronic bronchitis, fibromyalgia, migraine headaches, help-seeking from a professional, attending a self-help group, and calling a telephone help line (odds ratios ranged from 1.5 to 8.2).

Conclusions: Problem gambling was associated with a broad range of negative health correlates among women. Problem gambling is an important public health concern. These findings can be used to inform healthy public policies on gambling.

Key words: Gambling; health; mental disorders; suicide; women; public health

La traduction du résumé se trouve à la fin de l'article.

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In 2002, 5% of the adult population in Canada were at risk for gambling problems or were considered problem gamblers.¹ Problem gambling refers to gambling behaviour that has a negative impact on the gambler, others in his or her social network, or the community.² The expansion of legalized gambling may be especially appealing to women since women tend to participate in legal rather than illegal forms of gambling.³ Additionally, Video Lottery Terminal (VLTs) gambling is often reported as a preferred type of gambling among women,^{4,5} making the greater availability of VLTs in communities and casinos especially appealing to women gamblers. To date, little is known about the relationships between problem gambling and health, functioning, mental disorders, physical health conditions, perceived need for help, and help-seeking specifically among women.

A review of the current studies, mostly using men and women samples, indicates associations exist between problem gambling and suicidal ideation and attempts, mental disorders, and physical health conditions. Studies have found significant associations between problem gambling and suicidal behaviour,⁶⁻¹² mood, anxiety, and substance use disorders,¹³⁻¹⁵ and medical problems such as insomnia, headaches, stomach aches,¹⁶ stress-related illnesses,⁶ hypertension, tachycardia, angina, liver disease, and arthritis.¹⁷

Research that compares women problem gamblers to women non-problem gamblers will expand our understanding of the associations between problem gambling and health correlates among women rather than the more common investigation of how men

and women problem gamblers differ. Our knowledge of problem gambling among women is further restricted due to the dearth of studies on the relationships between problem gambling and psychological well-being, general health, distress, physical health conditions, perceived need for help with emotions or mental health, and help-seeking behaviour specifically among women. The current research provides a more comprehensive examination of these relationships, which to date have not been investigated among women gamblers.

To address some of the limitations in the current literature, we compared women non-problem gamblers to women problem gamblers to examine the relationships between problem gambling and numerous health correlates using a nationally representative sam-

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Table 1. Multinomial Logistic Regression, Binary Logistic Regression, and Linear Regression Analyses for Problem Gambling Versus Non-Problem Gambling and Health and Functioning among Women

| Dependent Variables | | Independent Variable Problem Gambling Versus Non-Problem Gambling | | |
|--------------------------|---------------------|--|---------------------------------------|---|
| | | Non-Problem Gambler (n=9,736) % (SE%) | Problem Gambler (n=320) % (SE%) | ORs* (95% CIs)† |
| Perceived general health | Excellent | 15.4 (0.6) | 7.4 (1.6) | 1.00 (-) |
| | Very good | 35.8 (0.8) | 25.4 (3.4) | 1.5 (0.8-2.7) NS |
| | Good | 34.1 (0.7) | 42.2 (4.0) | 2.6 (1.5-4.4) |
| | Fair/Poor | 14.7 (0.5) | 25.0 (3.3) | 3.5 (2.0-6.2) |
| | Ideation | 3.1 (0.2) | 10.2 (2.2) | 3.6 (2.1-6.0) |
| Suicide | Attempts | 0.5 (0.1) | 2.4 (1.2) | 4.7 (1.3-17.3) |
| Psychological well-being | reflect square root | Mean (SE Mean) 4.2 (0.03) | Mean (SE Mean) 4.9 (0.1) | Beta (95% CIs)† 0.7 (0.5-0.9) |
| | Distress | square root | 2.0 (0.02) | 2.7 (0.1) |

Separate regression models were run for each dependent variable.
 * ORs (Odds Ratios) = no covariates controlled for in the models.
 † 95% CI = 95% Confidence Interval; NS = Not Significant; Percents based on weighted n.

Table 2. Logistic Regression Analyses for Problem Gambling Versus Non-Problem Gambling and Mental Disorders among Women

| Dependent Variables | | Independent Variable Problem Gambling Versus Non-Problem Gambling | | |
|---------------------|--------------------------|--|---------------------------------------|--------------------|
| | | Non-Problem Gambler (n=9,736) % (SE%) | Problem Gambler (n=320) % (SE%) | ORs* (95% CIs)† |
| Mental disorders | Depression | 5.3 (0.3) | 10.2 (2.4) | 2.0 (1.2-3.4) |
| | Mania | 1.0 (0.1) | 4.0 (1.5) | 4.3 (1.7-11.1) |
| | Panic attacks | 10.1 (0.5) | 21.5 (3.2) | 2.4 (1.7-3.5) |
| | Social phobia | 3.5 (0.3) | 6.8 (1.7) | 2.0 (1.1-3.7) |
| | Agoraphobia | 1.0 (0.1) | 4.8 (1.9) | 5.2 (2.1-12.9) |
| | Alcohol dependence | 1.4 (0.2) | 5.3 (1.7) | 3.8 (1.9-7.7) |
| | Drug dependence | 0.4 (0.1) | 1.6 (0.9) | 3.8 (0.9-16.3) NS |
| | Any psychiatric disorder | 17.3 (0.6) | 35.6 (3.8) | 2.6 (1.9-3.7) |
| | Psychiatric comorbidity | 4.2 (0.3) | 11.9 (2.6) | 3.1 (1.9-5.2) |

Separate regression models were run for each dependent variable.
 * ORs (Odds Ratios) = no covariates controlled for in the models.
 † 95% CI = 95% Confidence Interval; NS = Not Significant; Percents based on weighted n.

ple. It was hypothesized that problem gambling compared to non-problem gambling among women would be associated with significantly increased odds of: 1) poor health and functioning (general health, psychological well-being, distress, and suicidal ideation and attempts); 2) mental disorders; 3) physical health conditions; and 4) perceived need for help and help-seeking behaviours.

METHODS

The nationally representative Canadian Community Health Survey (CCHS) Cycle 1.2 was used for the current research.¹⁸ Data were collected in 2002, using a random, multistage stratified cluster design (response rate = 77%).¹⁸ Women participants aged 15 years and older who reported having gambled at least once in the past 12 months (n=10,056) were selected for the current analysis (n=9,736 non-problem gamblers and n=320 problem gamblers).

The valid and reliable Canadian Problem Gambling Index (CPGI) was used to assess past 12-month prevalence of problem gambling.² The conventional approach of dichotomizing CPGI scores into non-problem gamblers (score of zero to two) and problem gamblers (score of three or greater) was used.

Perceived general health was measured with an item that asked in general how the respondent would rate their health: excellent, very good, good, or fair to poor. Past-month psychological well-being was measured using the Psychological Well-Being Manifestation Scale.¹⁹ A reflect and square root transformation was conducted due to the negatively skewed distribution. Past-month

distress was measured using the K10 distress scale, which assessed nervousness, hopelessness, restlessness, sadness, and worthlessness.²⁰ A positively skewed distribution was found for distress requiring a square root transformation.

Past-year suicidal ideation and attempts were measured using two separate items asking if the respondent 1) seriously thought about committing suicide or taking one's own life and 2) if the respondent did attempt suicide or try to take one's own life (yes or no) (see Table 1).

Past 12-month prevalence of Diagnostic and Statistical Manual, Fourth Edition (DSM-IV) mental disorders²¹ was assessed using the highly valid and reliable Composite International Diagnostic Interview (CIDI).²² Mental disorders assessed include: major depression; mania; panic attacks; social phobia; agoraphobia; alcohol dependence; drug dependence; any mental disorder; and comorbidity of two or more mental disorders (see Table 2).

All participants were asked if they had been given a diagnosis from a health care professional for chronic physical conditions (lasting or expected to last at least six months). Seventeen physical health conditions, any physical health conditions, and comorbidity of two or more physical health conditions were assessed (see Table 3).

Perceived need for help was assessed using an item asking respondents if during the past 12 months they felt they needed help for emotions, mental health, or use of alcohol or drugs, but did not receive it. Past 12-month help-seeking included help-seeking from a professional (a psychiatrist, family doctor, general practitioner, other medical doctor, psychologist, nurse, social worker or coun-

Table 3. Logistic Regression Analyses for Problem Gambling Versus Non-Problem Gambling and Physical Health Conditions among Women

| Dependent Variables | Independent Variable Problem Gambling Versus Non-Problem Gambling | | |
|-------------------------------|--|---------------------------------------|--------------------|
| | Non-Problem Gambler (n=9,736) % (SE%) | Problem Gambler (n=320) % (SE%) | ORs* (95% CIs)† |
| Food allergies | 9.7 (0.4) | 8.1 (2.0) | 0.8 (0.5-1.5)NS |
| Asthma | 9.5 (0.4) | 12.4 (2.6) | 1.3 (0.8-2.2)NS |
| Chronic bronchitis | 3.7 (0.2) | 8.3 (2.2) | 2.4 (1.3-4.3) |
| Fibromyalgia | 2.4 (0.3) | 6.8 (2.0) | 2.9 (1.4-6.0) |
| Arthritis or rheumatism | 21.1 (0.6) | 22.9 (3.2) | 1.1 (0.8-1.6)NS |
| Back problems | 21.6 (0.6) | 24.3 (3.2) | 1.2 (0.8-1.7)NS |
| Chronic fatigue syndrome | 1.5 (0.2) | 2.0 (1.1) | 1.3 (0.3-6.4)NS |
| Heart disease | 4.8 (0.2) | 5.4 (1.5) | 1.1 (0.6-2.2)NS |
| High blood pressure | 15.5 (0.5) | 11.9 (2.1) | 0.7 (0.5-1.1)NS |
| Stroke | 0.7 (0.1) | 1.4 (0.7) | 2.0 (0.6-6.2)NS |
| Migraine | 15.5 (0.6) | 21.1 (3.1) | 1.5 (1.0-2.1) |
| Diabetes | 4.4 (0.3) | 7.6 (2.3) | 1.8 (0.8-3.9)NS |
| Thyroid | 9.1 (0.4) | 8.7 (2.6) | 1.0 (0.5-1.9)NS |
| Bowel disorder | 4.2 (0.3) | 4.9 (1.6) | 1.2 (0.6-2.5)NS |
| Stomach/intestinal ulcers | 4.0 (0.2) | 4.2 (1.4) | 1.1 (0.5-2.2)NS |
| Cancer | 2.1 (0.3) | 3.9 (1.8) | 1.9 (0.7-5.4)NS |
| Multiple chemical sensitivity | 3.0 (0.2) | 3.1 (1.3) | 1.0 (0.4-2.9)NS |
| Any physical condition | 61.9 (0.7) | 65.3 (3.9) | 1.2 (0.8-1.6)NS |
| Comorbid conditions | 34.9 (0.7) | 40.7 (3.8) | 1.3 (0.9-1.8)NS |

Separate regression models were run for each dependent variable.
 * ORs (Odds Ratios) = no covariates controlled for in the models.
 † 95% CI = 95% Confidence Interval; NS = Not Significant; Percents based on weighted n.

selor, or religious advisor) for problems with emotions, mental health, or use of alcohol or drugs; attending a self-help meeting; and calling a telephone help line (see Table 4).

Statistical analysis

Binary logistic, multinomial logistic, or linear regression analyses were used to understand the relationships between problem gambling and health and functioning, mental disorders, physical health conditions, and perceived need for help and help-seeking. The level of measurement of the dependent variable determined which type of regression analysis was used. Assumptions for all models were verified. To ensure the data were representative of the Canadian population at the provincial level, statistical weights were applied. Additionally, bootstrapping variance estimation was used to adjust for the complex sampling design using the SAS callable version of SUDAAN software.²³

RESULTS

The prevalence of problem gambling among women who reported having gambled at least once in the past 12 months was 2.7% (SE = 0.2%). Problem gambling was associated with a significantly higher probability of poorer self-perceived general health, suicidal ideation and attempts, poorer psychological well-being, distress, all mental disorders (except drug dependence), chronic bronchitis, fibromyalgia, migraine headaches (borderline significance), help-seeking from a professional, attending a self-help group, and calling a telephone help line. The largest effects were found for fair/poor general health (OR = 3.5), suicidal ideation (OR = 3.6), suicide attempts (OR = 4.7), mental disorders (OR ranging from 2.0 to 5.2) and calling a telephone help line (OR = 8.2).

DISCUSSION

The current findings indicate that problem gambling was associated with reduced general health, distress, and decreased psycholog-

Table 4. Logistic Regression Analyses for Problem Gambling Versus Non-Problem Gambling and Perceived Need and Help-Seeking among Women

| Dependent Variables | Independent Variable Problem Gambling Versus Non-Problem Gambling | | |
|-------------------------------------|--|---------------------------------------|--------------------|
| | Non-Problem Gambler (n=9,736) % (SE%) | Problem Gambler (n=320) % (SE%) | ORs* (95% CIs)† |
| Perceived need without help-seeking | 3.3 (0.3) | 4.6 (1.2) | 1.4 (0.8-2.5) NS |
| Help-seeking from a professional | 11.6 (0.5) | 17.2 (2.7) | 1.6 (1.1-2.3) |
| Self-help group | 1.5 (0.2) | 3.3 (1.0) | 2.2 (1.2-4.4) |
| Telephone help line | 0.6 (0.1) | 4.3 (1.6) | 8.2 (3.1-21.5) |

Separate regression models were run for each dependent variable.
 * ORs (Odds Ratios) = no covariates controlled for in the models.
 † 95% CI = 95% Confidence Interval; NS = Not Significant; Percents based on weighted n.

ical well-being. Although previous research is not directly comparable, earlier studies using samples of older adults (men and women combined) also found a significant association between gambling and reduced levels of general health measured using the Short Form-12 (SF-12) and Short Form-36 (SF-36) Health Surveys.^{24,25}

The current results replicate previous findings on problem gambling and suicidal ideation and attempts⁶⁻¹² and extend our knowledge with the use of a nationally representative sample of women. Although the cross-sectional nature of the survey does not allow for causal conclusions, an association does alert us to the importance of early recognition of problem gambling among women due to the increased probability of suicidal ideation and attempts.

Problem gambling among women was associated with increased odds of all mental disorders assessed with the exception of drug dependence (which was non-significant, likely due to a possible type II error because of small numbers). A number of possible mechanisms may explain the relationship between problem gambling and mental disorders. First, a direct relationship may exist with problem gambling leading to an increased likelihood of mental disorders or, the reverse, mental disorders leading to problem gambling as a means of dealing with stress, anxiety, and mood. In addition, personality factors may be important to consider since personality may cause variation in mental disorders and personality may be varied by problem gambling. Also, if a direct relationship exists between problem gambling and mental disorders, then personality factors may mediate this direct relationship.

Another underlying mechanism in the relationship between problem gambling and mental disorders may be genetics. Although it is not clear if a genetic predisposition exists for problem gambling,²⁶ it is possible that genetic make-up may predispose an individual to both problem gambling and mental disorders. Finally, shared environmental risk factors such as poverty may predispose women to both problem gambling and mental disorders. Future research is necessary to clarify possible underlying mechanisms.

A relationship was found in the current research between problem gambling and fibromyalgia and migraine headaches, which may relate to possible underlying mental stress. In spite of this, and contrary to prior research from the United States,¹⁷ the current findings did not provide strong evidence for a relationship between problem gambling and physical health conditions. However, comparability between these two studies is limited due to differences in measures and samples. Several explanations can be provided for

the lack of significant findings between problem gambling and the majority of physical health conditions. First, it has been found that women develop gambling problems at a much faster pace compared to men.²⁷ The shorter time period of gambling among women may mean less time for the subsequent physical health conditions to develop and be diagnosed. Second, the physical health conditions assessed in the CCHS 1.2 were based on respondents' self-reports of physician diagnoses, but were not verified using external sources. Although this method has been used in previous gambling research,¹⁷ the method of assessment may introduce some sampling error with some conditions being over- or under-reported. Third, the list of chronic conditions was not exhaustive. Finally, problem gambling was associated with only 3 of the 17 physical health conditions. Further research is necessary to rule out the possibility of a type I error. It is possible that significant relationships do not exist between problem gambling among women and the physical health conditions assessed.

The significantly higher probability of calling a telephone help line associated with problem gambling may not be surprising since telephone help lines are the most heavily advertised way to seek help for gambling problems. As well, the anonymity of calling a telephone help line may make it a desirable choice. If organized effectively with treatment options and other resources, telephone help lines can be a valuable tool in helping women access help for gambling problems.

Based on the current findings, the following recommendations for prevention of problem gambling among women may be suggested: 1) screening women with gambling problems for suicidal ideation and attempts; 2) screening women with gambling problems for comorbidity of other mental disorders; and 3) promoting 24-hour toll-free gambling telephone help lines and ensuring that help-line operators are able to refer callers to local treatment options and resources.

The limitations of the current research should be noted. First, data used in the analysis were cross-sectional, which does not allow for inferences regarding causation. Second, although numerous mental disorders were assessed, several important axis I disorder (e.g., post-traumatic stress disorder and generalized anxiety disorder) and axis II disorders were not assessed. Third, the ability to investigate the relationships between problem gambling and physical health conditions could have been improved if physician-diagnosed conditions were included. Fourth, the time frame for measurement for most variables was the past 12 months with only a few variables using a shorter time frame. It is possible that the different time frames for these variables may have affected the results. As well, it was not possible to assess lifetime gambling with these data. Fifth, the assessment of perceived need for help and help-seeking were not specific to gambling problems, which may account for the lack of significant findings and similar help-seeking rates among problem and non-problem gamblers. Finally, wide confidence intervals were found around some odds ratios due to low frequencies of the variables in the models. This is often found in gambling research, but nevertheless these results should be noted and interpreted with caution.

The current research is the first comprehensive nationally representative investigation of problem gambling and health correlates among women. The key findings indicate that problem gambling is associated with poor health and functioning, mental disorders,

and help-seeking among women. These findings can help to inform healthy public policies on gambling.

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RÉSUMÉ

Objectif : Le jeu de hasard est de plus en plus répandu chez les femmes depuis la croissance généralisée de l'industrie du jeu. On connaît encore mal le lien entre les problèmes de jeu chez les femmes et les corrélats mentaux et physiques. C'est pourquoi nous avons examiné, à l'aide d'un échantillon canadien représentatif de tout le pays, les liens importants entre les problèmes de jeu des femmes, leur santé et leur fonctionnement, leurs troubles mentaux, leurs troubles physiques et leur propension à chercher de l'aide.

Méthode : Nos données proviennent du cycle 1.2 de l'Enquête sur la santé dans les collectivités canadiennes (ESCC 1.2; N=10 056 femmes de 15 ans et plus; données recueillies en 2002). Notre analyse statistique a fait appel à des modèles de régression logistique binaire, de régression logistique multinomiale et de régression linéaire.

Résultats : Les problèmes de jeu au cours des 12 mois antérieurs étaient associés à une probabilité sensiblement plus élevée de présenter les

facteurs suivants : moins bonne santé en général, idées suicidaires ou tentatives de suicide, bien-être psychologique diminué, détresse accrue, dépression, manie, crises de panique, phobie sociale, agoraphobie, dépendance à l'alcool, trouble mental, comorbidité de troubles mentaux, bronchite chronique, fibromyalgie, migraines, recherche d'aide auprès d'un professionnel, fréquentation d'un groupe d'entraide et appel à un service d'assistance téléphonique (les rapports de cotes variaient entre 1,5 et 8,2).

Conclusion : Les problèmes de jeu étaient associés à un vaste éventail de corrélats de santé négatifs chez les femmes. Ils représentent un important problème de santé publique. Les constatations de l'étude peuvent servir à étayer des politiques publiques favorisant la santé sur le jeu de hasard.

Mots clés : jeu de hasard; santé; troubles mentaux; suicide; femmes; santé publique

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