Social disadvantage and gambling severity: a population-based study with register-linkage

Tiina A. Latvala, Tomi P. Lintonen, Matthew Browne, Matthew Rockloff, Anne H. Salonen

1 The Finnish Foundation for Alcohol Studies, Helsinki, Finland
2 Department of Public Health Solutions, Health and Well-Being Promotion Unit, Finnish Institute for Health and Welfare, Helsinki, Finland
3 Experimental Gambling Research Laboratory, Central Queensland University, Australia
4 Faculty of Health Sciences, University of Eastern Finland, Finland

Correspondence: Tiina Latvala, Department of Public Health Solutions, Alcohol, Drugs and Addictions Unit, Finnish Institute for Health and Welfare, Helsinki, Finland, P.O. Box 30, FI-00271 Helsinki, Finland. Tel: +358 50 524 6328, e-mail: tiina.latvala@thl.fi

Background: Studies have found an association between problem gambling and poverty. However, there is relatively little research on social inequalities and problem gambling using population representative data. Methods: A population-representative self-report web-based and postal survey with register-based linkage was conducted in three geographical areas of Finland. Participants (n = 7186, aged 18 or older) were randomly selected from the population register. Sociodemographic factors and social welfare benefits were studied among gambling groups and their statistical difference were examined by \( \chi^2 \) test. Seven logistic regression models were calculated, where unemployment, social security benefits and low income were treated as dependent variables and where sex, age, family structure and education were controlled as covariates. The results were presented as odds ratios (OR) with 95% confidence intervals (CIs). Results: Problem and at-risk gambling (ARG) was more common among people who were unemployed [PG: \( \gamma^2 = 6.4 (1), P < 0.01, \text{ARG}: \gamma^2 = 12.4 (1), P < 0.001 \)] or had received social security benefits [PG: \( \gamma^2 = 41.6 (1), P < 0.001, \text{ARG}: \gamma^2 = 22.9 (1), P < 0.001 \)]. The OR for problem gambling was high as 5.6 (CI: 3.22–9.61) among respondents who had received social assistance even when covariates were taking into account. Almost a third of those experiencing problem or at-risk gambling received at least one form of social security benefit.

Conclusions: The most important task of gambling policy should be reducing gambling-related harms and diminishing social inequality. However, even in government organized system where gambling profits are used for the common good, profits come from the most socially disadvantaged people thereby exacerbating inequality.

Introduction

People’s access to money can influence their ability to live a healthy life. Socio-economic disadvantage can diminish well-being and negatively affect public health outcomes. Gambling can raise significant individual health, financial and interpersonal issues. A recently published systematic review indicates that gambling-related harms are associated with specific social, demographic and environment inequalities.
Gambling expenditure tends to increase with income, but people with lower incomes spend relatively larger proportion of their total budget on gambling. However, there are also studies that have shown higher absolute gambling expenditure among lower income groups on some forms and in some localities. Similarly, problem gambling has been linked with lower personal and household income, perhaps due to less capacity to absorb gambling losses. As a result, gambling-related financial harms affect those who have the least resources to face them, leading them to bear the bulk of the burden of the economic cost of gambling. Thus, gambling may act to increase social inequality and poverty.

Because gambling tends to result in a greater financial flows from the less well off, government gambling revenues are referred to as a regressive tax. In Finland, gambling is organized as a governmental monopoly and gambling profits are used for funding social work and health, culture and art, sports, war veterans, science, youth work and horse breeding. The operation of many non-governmental organizations also relies on gambling revenues. Veikkaus Oy, the only legal gambling operator in Mainland, Finland, offer many land-based gambling activities and online gambling. Furthermore, Ålands Penningsautomatförening (PAF) operates in Åland Islands, but also in ships/cruisers between Finland and neighboring countries. However, the Lottery Act, which provides the foundation of Finnish gambling legislation, is not able to prohibit foreign companies from offering online gambling services, and gambling participation on foreign sites is legal. Besides the very large number of gambling sites available, Finland has exceptionally wide supply of slot machines, which can be found supermarkets, kiosks, petrol stations, cafés, etc.

Past-year gambling participation prevalence in Finland has been around 80% in 2015 and 2019 and per capita spending on gambling is the fourth largest in the world. Based on the latest population study, the past-year problem gambling prevalence rate was around 3%. In 2019, an estimated 35% of the profits came from persons with gambling problems, while an additional 17% came from at-risk gambling. Furthermore, gambling is also clustered, as a small group of gamblers (2.5%) bring around half of the gambling revenue. Amongst these high-intensity consumers, as much as 62% of the money came from persons with gambling problems. Unemployment has also been linked to gambling in some studies. Gambling can reduce work performance and cause withdrawal from work and even be a reason for job loss. In Finland, the prevalence of past-year gambling was lower among the unemployed compared with employed persons; however, unemployed persons spent at least as much money betting as employed gamblers. Further, unemployment has been shown to be a risk factor for problem gambling among Finnish people. There is also evidence that the receipt of social security benefits is more common among people who are unemployed or receive social security benefits. Additionally, problem gambling is more prevalent among low-educated, young, men and those living alone.

Other social inequalities and addictive behaviors may be linked with gambling. Studies have found an association between problem gambling and poverty at both individual and community levels. This may be particularly true in some specific sub-populations, such as minority ethnic groups, homeless people and patients seeking substance use treatment. However, there is relatively little research on social inequalities and problem gambling using population representative data. Our particular interest is in the ‘social gradient,’ referring to the phenomenon whereby socially disadvantaged persons are more likely to experience gambling problems.

With recourse to a representative self-report sample from three geographical areas in Finland, and employing register-based linkage to retrieve socio-economic information, this study addresses the question of whether problem and at-risk gambling is more common among people who are unemployed or receive social security benefits.

### Methods

#### Participants

This study used the first wave data of the population-based Gambling Harms Survey. The Finnish Institute for Health and Welfare was responsible for conducting the study among residents of three geographical areas: Uusimaa, Pirkanmaa and Kymenlaakso. The population in these areas covers 42% of the Finnish population. The data were collected by Statistics Finland between January and March in 2017, but questions requested gambling occurring in 2016. Online and postal surveys were available in two official languages: Finnish and Swedish. A total of 20,000 potential participants were randomly selected from the population register. Participants had to be 18 years old or over, and they need to understand Finnish or Swedish. People 18–24 years old were oversampled: 15% of this age group was sampled for the survey while they represent only 10% of the population. Institutionalized persons (prisoners, infirm, etc.) were excluded.

An invitation letter was sent to the potential participants’ home address retrieved from the national population register system. Potential participants received written information about the study and the principles of voluntary participation. According to the national data protection regulations of that time, potential participants were informed that participating the study involved the register linkage. Furthermore, information about the registrars, their statutory right to disclose data for scientific purposes and a list of the register-based variables used in analyses were described in the letter. Lastly, the invitation letter included a link to the online survey and personal participation code for those willing to participate. Two reminders including postal questionnaires and prepaid return envelopes were sent.

Non-eligible (n = 67) were excluded, leading the study sample size to 19,933 persons. Overall, 7,186 adults participated in the study, yielding a response rate of 36.1%. Most respondents (71%, n = 5,084) participated using the online survey. The whole sample was composed of 47.7% males, and the ages of respondents ranged from 18 to 94 years (M = 50.5, SD = 18.8). Overall, older, women, those who were married, and respondents with higher education were more willing to participate than men, younger, divorced, or single and respondents with lower education. Most active respondents were 65–74 and 55–64-year olds while 18–24-year olds, particularly men in this age group, were least active.

The research protocol was approved by The Ethics Committee of the Finnish Institute for Health and Welfare (Statement THL/1390/6.02.01/2016) and the basic principles of the research ethics were followed throughout the research process (The World Medical Association’s Declaration Helsinki 2004). Permission to use the register-based measures was obtained from Statistics Finland and their rules and instructions were followed. The statistical analyses were conducted in a protected environment using the remote access system, and the results were transferred to this article through a screening process.

#### Measures from the survey

##### Problem gambling

The Problem and Pathological Gambling Measure (PPGM) was used in defining past-year (in 2016) gambling severity. The PPGM has proven to be a sensitive and accurate instrument in identifying problem gambling. The PPGM consists of 14 items, which are organized into three sections: Problems (seven questions), Impaired Control (four questions) and Other Issues (three questions). Based on the answers, respondents were categorized as recreational gamblers, at-risk gamblers, problem gamblers or pathological gamblers. For the purposes of this study, problem gambling and pathological gambling were combined. In this study, PPGM was asked only from those people who reported gambling at
least once a month and consequently respondents gambling less-than-monthly were categorized as recreational gamblers. Using the PPGM, the past-year problem and pathological gambling prevalence rate was 2.3%. Internal scale reliability measured by Cronbach’s alpha for the PPGM in this study was 0.69.

Measures from the register data
The survey data were linked with the social security register data administered by Statistics Finland. The register data were from year 2016. In this study, the social gradient was explored from the perspective of sociodemographic and social security benefits. The sociodemographic data included information about the sex, age, household structure, education, unemployment and households’ disposable income.

Sociodemographic measures
Household structure. The register data contained information on family size and number of children under and over 18 years old. Based on this information, a variable reflecting household structure was formed using a definition published by Statistics Finland. Non-family refers to the participants living alone or those adults who were living together but were not nuclear family. For example, siblings living together were not defined as a family. The same applies to two same sex adults living together unless they were a married couple or in a registered partnership. Families with under 18-year-old child/children, were classified as ‘family with children’ and those who had only over 18-year-old child/children or were a married/registered couple or as ‘family with adults’.

Education. Education was based on the highest degree and followed the International Standard Classification of Education. Those who had no degree were coded as ‘low education’ (below Level 3). Levels 3 and 4 were classified as ‘medium education’ and Level 5 or higher as ‘high education’.

Unemployment. Employment status was available for persons aged up to 65 years and it was defined based on information in the last working day of the year 2016. If a person was unemployed, she/he was given a value one. All other options were recoded as a zero.

Households’ disposable income. Households’ disposable income was divided by consumption unit. One adult in the household is one consumption unit. Other persons in the household aged at least 14 are 0.5 consumption units and children aged 0–13 each are 0.3 consumption units. For example, a household consisting of spouses and one child aged under 14 together are 1.8 consumption units. Households’ disposable income per year was based on information during the year 2016 and was divided into quartiles. The first quartile was defined as ‘low income’.

The Finnish social security system
Main purpose of Finnish social policy is prevention of social problems, and it is based on public responsibility and tax funding. The social security system consists of services and cash benefits that provide economic security in the following situations: retired based on an age, incapacity for work, illness, unemployment, childbirth, death of the family breadwinner, rehabilitation or studies. All permanent Finnish citizens are entitled to apply for social security benefits as needed. All of these benefits, excluding social assistance were issued and registered by the Social Insurance Institution of Finland. In 2016, the municipal social services offices were responsible for granting social assistance.

Receiving at least one form of social security benefit. If participant received at least one form of the social security benefit (unemployment benefits, sickness allowance, disability pension or social assistance) value ‘1’ was given to them.

Unemployment benefits. ‘Unemployment benefits’ included direct payments to the unemployed, adult education allowances and labor market subsidy for self-employed persons, all of which all try to improve persons’ labor market position. The direct payment for unemployment is for jobseekers up to 64 years old who are able to work, available to the labor market, looking for a full-time job and in need financial assistance. The Adult education allowances for employees helps adults to develop their professional ability and assists to update their competences. Self-employed persons can get a temporary labor market subsidy if their full-time employment in the business has ended. In the register-based data, the unemployment allowance was recorded in euros per year as paid in 2016. This measure was recoded, however, for the purposes of our analyses. A value of ‘1’ was given to those persons who had received any unemployment benefits regardless of kind or amount.

Sickness allowance and disability pension. Sickness allowance is usually payable for a maximum of 300 working days (about a year). After being absent from work because of illness, and having received sickness allowance for 150 working days, there is an availability of rehabilitation (i.e. an accommodation for the illness). If the work ability is not restored or improved during the treatment or rehabilitation, a person may be entitled to a disability pension. In the register data, sickness allowance was presented as euros/year. If person had disability pension during year 2016, she/he was given value ‘1’ regardless of the amount.

Social assistance. Social assistance is last-resort financial assistance under the Finnish social welfare system. Person/family is entitled to social assistance when the income and assets are insufficient to cover the essential expenses of everyday life. If a person had received social assistance during year 2016, she/he was given a value ‘1’.

Table 1 Respondents’ (N = 7186) sociodemographic factors, gambling severity based on PPGM and social welfare payments during the year 2016

| Sex          | %    | N   |
|--------------|------|-----|
| Men         | 47.7 | 3274|
| Women      | 52.3 | 3910|
| Age         |      |     |
| 18–28       | 17.3 | 1238|
| 29–34       | 9.8  | 561 |
| 35–54       | 33.1 | 2075|
| 55–74       | 30.5 | 2633|
| >75         | 9.3  | 679 |
| Household structure |     |     |
| Non-family household | 28.7 | 2044|
| Family with adults | 47.2 | 3566|
| Family with children | 24.1 | 1543|
| Education   |      |     |
| Low         | 22.1 | 1292|
| Medium      | 39.8 | 2683|
| High        | 38.1 | 3213|
| Unemployment|      |     |
| Yes         | 5.9  | 367 |
| No          | 94.1 | 6819|
| Households’ disposable income/year € |     |     |
| 20 744 or less | 25.0 | 1710|
| 20 755–28 133 | 25.0 | 1727|
| 28 134–37 394 | 25.0 | 1793|
| 37 395 or more | 25.0 | 1923|
| Gambling severity* |     |     |
| Problem gambling | 2.3  | 139 |
| At-risk gambling   | 9.6  | 626 |
| Recreational gambling | 70.9 | 5003|
| No gambling            | 17.3 | 1310|
| Had received at least one form of social security benefit |     |     |
| Yes         | 20.6 | 1317|
| No          | 79.4 | 5871|
| Unemployment benefit |     |     |
| Yes         | 13.5 | 853 |
| No          | 86.5 | 6279|
| Disability pension |     |     |
| Yes         | 3.9  | 246 |
| No          | 96.1 | 6942|
| Sickness allowance |     |     |
| Yes         | 3.4  | 192 |
| No          | 96.6 | 6158|
| Social assistance |     |     |
| Yes         | 4.8  | 296 |
| No          | 95.2 | 6892|

% from weighted data, N from non-weighted.
*The Problem and Pathological Gambling Measure.
Sociodemographic factors and social welfare benefits among gambling severity groups based on PPGG % (N)

|                          | Problem gambling | At-risk gambling | Recreational gambling | No gambling |
|--------------------------|------------------|-----------------|-----------------------|-------------|
| Sex                      |                  |                 |                       |             |
| Men                      | 3.7 (106)        | 13.5 (401)      | 69.7 (2263)           | 13.1 (458)  |
| Women                    | 0.9 (33)         | 6.0 (225)       | 72.0 (2736)           | 21.1 (852)  |
| $\chi^2$ test (df)       | 60.5 (1), $P < 0.001$ | 115.3 (1), $P < 0.001$ | 4.4 (1), $P < 0.05$ | 79.1 (1), $P < 0.001$ |
| Age 28 or younger        |                  |                 |                       |             |
| Yes                      | 3.1 (32)         | 11.7 (136)      | 64.5 (786)            | 20.8 (274)  |
| No                       | 2.1 (107)        | 9.1 (490)       | 72.3 (4215)           | 16.5 (1036) |
| $\chi^2$ test (df)       | 4.5 (1), $P < 0.05$ | 7.6 (1), $P < 0.01$ | 29.9 (1), $P < 0.001$ | 12.9 (1), $P < 0.001$ |
| Household structure      |                  |                 |                       |             |
| Non-family household     | 3.0 (53)         | 11.1 (205)      | 68.4 (1367)           | 17.5 (378)  |
| Family household         | 1.9 (84)         | 9.0 (420)       | 71.9 (3613)           | 17.1 (924)  |
| $\chi^2$ test (df)       | 8.5 (1), $P < 0.01$ | 7.0 (1), $P < 0.01$ | 9.1 (1), $P < 0.01$ | 0.1 (1), $P < 0.05$ |
| Low education            |                  |                 |                       |             |
| Yes                      | 3.1 (111)        | 11.2 (415)      | 70.6 (2744)           | 15.1 (627)  |
| No                       | 0.8 (28)         | 7.0 (211)       | 71.5 (2259)           | 20.6 (683)  |
| $\chi^2$ test (df)       | 39.8 (1), $P < 0.001$ | 33.5 (1), $P < 0.001$ | 0.8 (1), $P < 0.05$ | 35.5 (1), $P < 0.001$ |
| Unemployment             |                  |                 |                       |             |
| Yes                      | 4.0 (12)         | 14.5 (49)       | 70.3 (259)            | 11.2 (44)   |
| No                       | 2.2 (127)        | 9.3 (577)       | 70.9 (4742)           | 17.7 (1266) |
| $\chi^2$ test (df)       | 6.4 (1), $P < 0.01$ | 12.4 (1), $P < 0.001$ | 0.1 (1), $P < 0.05$ | 11.7 (1), $P < 0.001$ |
| Low income               |                  |                 |                       |             |
| Yes                      | 3.5 (50)         | 10.8 (173)      | 66.8 (1116)           | 18.9 (322)  |
| No                       | 1.8 (87)         | 9.2 (452)       | 72.3 (3864)           | 16.7 (988)  |
| $\chi^2$ test (df)       | 16.0 (1), $P < 0.001$ | 4.1 (1), $P < 0.05$ | 18.9 (1), $P < 0.001$ | 4.2 (1), $P < 0.05$ |
| Receiving at least one form of social security benefit | | | | |
| Yes                      | 4.5 (51)         | 12.9 (160)      | 69.5 (911)            | 13.2 (184)  |
| No                       | 1.7 (88)         | 8.7 (466)       | 71.3 (4092)           | 18.3 (1126) |
| $\chi^2$ test (df)       | 41.6 (1), $P < 0.001$ | 22.9 (1), $P < 0.001$ | 2.0 (1), $P < 0.05$ | 21.4 (1), $P < 0.001$ |
| Unemployment benefit     |                  |                 |                       |             |
| Yes                      | 3.5 (22)         | 12.1 (98)       | 72.0 (608)            | 12.5 (118)  |
| No                       | 2.1 (116)        | 9.2 (521)       | 70.9 (4367)           | 17.8 (1172) |
| $\chi^2$ test (df)       | 7.0 (1), $P < 0.01$ | 8.0 (1), $P < 0.01$ | 0.4 (1), $P < 0.05$ | 16.7 (1), $P < 0.001$ |
| Disability pension       |                  |                 |                       |             |
| Yes                      | 8.0 (18)         | 14.2 (31)       | 62.5 (155)            | 15.3 (38)   |
| No                       | 2.0 (121)        | 9.4 (595)       | 71.2 (4848)           | 17.3 (1272) |
| $\chi^2$ test (df)       | 42.6 (1), $P < 0.001$ | 7.0 (1), $P < 0.01$ | 9.7 (1), $P < 0.01$ | 0.8 (1), $P < 0.05$ |
| Sickness allowance       |                  |                 |                       |             |
| Yes                      | 5.6 (11)         | 12.6 (23)       | 70.1 (286)            | 11.7 (41)   |
| No                       | 2.2 (116)        | 9.2 (495)       | 70.8 (4123)           | 17.8 (1135) |
| $\chi^2$ test (df)       | 10.3 (1), $P < 0.001$ | 2.9 (1), $P < 0.05$ | 0.1 (1), $P < 0.05$ | 5.4 (1), $P < 0.05$ |
| Social assistance        |                  |                 |                       |             |
| Yes                      | 9.7 (25)         | 15.0 (46)       | 63.7 (186)            | 11.5 (33)   |
| No                       | 1.9 (114)        | 9.3 (580)       | 71.3 (4817)           | 17.5 (1277) |
| $\chi^2$ test (df)       | 89.9 (1), $P < 0.001$ | 12.3 (1), $P < 0.001$ | 8.9 (1), $P < 0.01$ | 8.3 (1), $P < 0.01$ |

% from weighted data, N (7186) from non-weighted.

**Statistical analysis**

Sociodemographic factors and social welfare benefits were studied among gambling groups and their statistical difference were examined by $\chi^2$ test (table 2). Unemployment, social security benefits and low income were treated as dependent variables. Seven logistic regression models (M1a–M1g) where sex and age were adjusted were created. In models M1h–M1n also family structure and education were adjusted. For all of these models, assumptions for logistic regression (lack of multicollinearity and outliers) were checked. The results were presented as odds ratios (OR) and 95% confidence interval (95% CI) (table 3). Analyses were done using IBM SPSS Statistics for Windows version 27.0.

**Results**

Respondents’ sociodemographic factors, gambling severity and social welfare payments during the year 2016 are presented in table 1. Of the respondents, 2.3% were problem and 9.6% at-risk gamblers. The proportion of unemployed respondents was 5.9%. Overall, 20.6% of respondents had received at least some kind of social security benefit. Unemployment benefit (13.5%) was the most common form of benefit (table 1).

The association between sociodemographic factors and social welfare benefits among gambling severity groups are presented in table 2. Problem and at-risk gambling was more common among men, among respondents who were younger than 29 years old, among low educated and among people from non-family households. Further, problem and at-risk gambling was associated more often with unemployment, low income and receiving at least one form of social security benefit. Overall, 31% of problem and at-risk gamblers had received at least one form of social security benefit. Those who had experienced problem and at-risk gambling had received more often unemployment benefits, disability pension and social assistance. However, receiving sickness allowance was more common only among those experiencing problem gambling (table 2).

The results of logistic regression models for unemployment, low income and social welfare benefits according to gambling severity group and sociodemographic factors are presented in table 3. Among the unemployed, among those who received unemployment benefits and those receiving at least one form of social security benefit, the ORs for problem, at-risk and recreational gambling were higher compared to non-gambling, even when sex and age...
were adjusted in models M1a-M1g and in models M1h-M1n were also household structure and education were taking into consideration. Among respondents receiving disability pension, sickness allowance and social assistance ORs for problem and at-risk gambling were statistically significant, but among those receiving sickness allowance only OR for problem gambling remained statistically significant in model M5a. OR for problem gambling was especially high (7.7) among respondents who received social assistance and OR remained high (5.6) even when sex, age, household structure and education were adjusted in model M7a. People who had low income, OR for problem gambling was 1.8, but when household structure and education were taken into consideration OR was no longer statistically significant (table 3).

### Discussion

The major finding of this study was that problem and at-risk gambling was more common among people who were unemployed or had received social security benefits. Thus, it is reasonable to conclude that socially disadvantaged persons are more likely to experience gambling problems. It has been previously noted that gambling-related financial harms have the biggest effect on socially disadvantaged persons.13 Especially interesting was the result indicating that among respondents who had received social assistance, the likelihood of problem gambling was high. Social assistance is the last-resort financial support covering essential expenses of everyday life.32 This support prior findings that found that losses from gambling tend to further impair individuals’ already weak financial situation, and can lead to taking high-interest consumer credit and other debt-related problems and homelessness. Thus, it appears to be particularly important to detect problem gambling among people who receive social assistance and provide them treatment that they need. In order to do this, screening methods and tools should be developed and used in Social Insurance Institution of Finland and in municipal social services offices. It would also be worthwhile to raise awareness of social workers and benefits officers of the wide range of negative outcomes and risks associated with problem gambling.

Past-year gambling participation in Finland has been as high as 80% in 2015 and 201914 and per capita spending on gambling is the fourth largest in the world.15 It is estimated 35% of the profits came from persons with gambling problems, while an additional 17% came from at-risk gambling.17 Although gambling taxation revenue is used for the common good, it is disproportionately derived from persons with gambling problems and the socially disadvantaged. Therefore, gambling revenues are properly referred to as a regressive tax.7,13 Further, we found that almost a third of those experiencing gambling problems and the socially disadvantaged. Thus, it appears to be particularly important to detect problem gambling among people who receive social assistance and provide them treatment that they need. In order to do this, screening methods and tools should be developed and used in Social Insurance Institution of Finland and in municipal social services offices. It would also be worthwhile to raise awareness of social workers and benefits officers of the wide range of negative outcomes and risks associated with problem gambling.

### Table 3: Logistic regression models for unemployment, low income and social welfare benefits according to gambling group (based on PPGM) and sociodemographic factors presented as OR and 95% CI

| Models | M1a | M1b | M1c | M1d | M1e | M1f | M1g |
|--------|-----|-----|-----|-----|-----|-----|-----|
|        | Unemployment | Low income | At least one social security benefit | Unemployment benefit | Disability pension | Sickness allowance | Social assistance |
| Problem gambling | 2.50 | 1.75 | 3.82 | 2.30 | 5.33 | 4.69 | 7.65 |
| (1.39–4.50) | (1.23–2.50) | (2.68–5.45) | (1.49–3.54) | (3.05–9.31) | (2.29–9.61) | (4.59–12.75) |
| At-risk gambling | 2.17 | 1.08 | 2.09 | 1.85 | 1.87 | 2.40 | 2.42 |
| (1.46–3.24) | (0.87–1.34) | (1.66–2.63) | (1.40–2.45) | (1.19–2.95) | (1.37–4.20) | (1.57–3.74) |
| Recreational gambling | 1.51 | 0.86 | 1.38 | 1.46 | 0.98 | 1.53 | 1.43 |
| (1.10–2.08) | (0.75–0.99) | (1.16–1.63) | (1.19–1.80) | (0.69–1.38) | (1.00–2.36) | (1.01–2.02) |
| No gambling | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Men | 1.59 | 0.89 | 0.93 | 1.05 | 0.78 | 0.76 | 1.08 |
| (1.29–1.95) | (0.79–0.99) | (0.83–1.05) | (0.91–1.21) | (0.60–1.00) | (0.62–0.93) | (0.86–1.36) |
| Women | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Age 28 or younger | 1.13 | 2.14 | 1.19 | 1.37 | 0.19 | 0.46 | 2.27 |
| (0.88–1.45) | (1.88–2.44) | (1.03–1.38) | (1.16–1.63) | (1.05–1.33) | (0.83–0.94) | (0.79–2.89) |
| Age over 28 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

**Bolded numbers are statistically significant.**
opposition to its own goals when simultaneously providing both benefits to improve welfare and opportunities to spend these benefit payments instead on gambling.

We found that problem and at-risk gamblers are more often unemployed and in receipt of social security benefits, which is consistent with earlier studies.36,21 Those unemployed and out of work because of sickness or other disability may gamble to have something to do or/and to try to win money.37 Gambling may also offer hope, albeit slight, for a better life when other opportunities do not present themselves.23 Without access to socialization associated with work, the motivation for gambling among people out of workforce may also partly be in the social interactions that gambling venues offer.38 Gambling may also offer way to escape problems, which is especially common for problem gamblers.39 However, more research is needed to discover motivation for gambling among people out of workforce. Finally, the observation that problem gambling is more prevalent among low-educated, young, men and those living in non-family household is supported by earlier findings.21,22 However, our study only partially supported earlier findings on associations between problem gambling and lower personal and household income.8 When household structure and low education were adjusted in model, the link between problem gambling and low income did not remain statistically significant. This suggests that these variables may mediate the association between income and problem gambling.

There are some limitations in this study, which should be taken into consideration when interpreting the results. The response rate of this study (36%) was relatively low, but better than the international average for web-based and postal problem gambling surveys.40 Also, as the data were restricted on three areas in Finland, the data do not cover whole Finland. The residents in these three areas cover 42% of the Finnish population. Further, some of the measures from register data had quite a high proportion of missing values (unemployment: 6%, disability pension: 9%, sickness allowance: 12%), which, depending on differential non-response rates among those receiving benefits, may have affected outcome estimates. Finally, as this was a cross-sectional study, and therefore definitive conclusions regarding causal relationships between employment, social security benefits, low income and problem gambling was not possible.

Problem and at-risk gambling was more common among socio-economically disadvantaged persons. The relationship almost certainly acts to increase and maintain social disparities, which in turn are likely to exacerbate the harmful effects of unsustainable financial losses. Gambling policy should be focus on reducing gambling-related harms in general, with a special focus on reducing the unequal burden borne by those who are financially disadvantaged. Although a government organized system, such as Finland employs gambling profits for the common good, the net effect is like to enhance inequality since revenues are disproportionately derived from those least able to afford the cost.

**Funding**

The Gambling Harms survey was funded by the Ministry of Social Affairs and Health, Finland, within the objectives of the §52 Appropriation of the Lotteries Act. Daily work of the author A.H.S. and T.A.L. (since August, 2021) at the Finnish Institute for Health and Welfare, Finland, was also funded by the Ministry. Furthermore, post doctoral work of T.A.L. was supported by a grant based on the funding from the Ministry but was granted by the Finnish Foundation for Alcohol Studies.

**Conflicts of interest:** None declared.

**Key points**

- Problem and at-risk gambling was more common among people who were unemployed or had received social security benefits.
- Almost a third of those experiencing problem or at-risk gambling received at least one form of social security benefit.
- Gambling policy should be focus on reducing gambling-related harms in general, with a special focus on reducing the unequal burden borne by those who are socioeconomically disadvantaged.

**References**

1. Reading R. Poverty and the health of children and adolescents. *Arch Dis Child* 1997; 76:463–7.
2. Raybold JN, Larkin M, Tunney RJ. Is there a health inequality in gambling related harms? A systematic review. *BMC Public Health* 2021;21:305.
3. Muggleton N, Parpart P, Newall P, et al. The association between gambling and financial, social and health outcomes in big financial data. *Nat Hum Behav* 2021;5:319–26.
4. Oksanen A, Savolainen I, Sirola A, Kaakinen M. Problem gambling and psychological distress: a cross-national perspective on the mediating effect of consumer debt and debt problems among emerging adults. *Harm Reduct J* 2018;15:45.
5. Macdonald M, McMullan JL, Perrier DC. Gambling households in Canada. *J Gambl Stud* 2004;20:187–236.
6. Castrén S, Konttio J, Alho H, Salonen AH. The relationship between gambling expenditure, socio-demographics, health-related correlates and gambling behaviour—a cross-sectional population-based survey in Finland. *Addiction* 2018; 113:91–106.
7. Roukka T, Salonen AH. The winners and the losers: tax incidence of gambling in Finland. *J Gambl Stud* 2020;36:1183–204.
8. Beckert J, Lutter M. The inequality of fair play: lottery gambling and social stratification in Germany. *Eur Soc Rev* 2009;25:475–88.
9. Lower L, Eyre-Charg KM, Pollio DE, North CS. Problem gambling and homelessness: results from an epidemiologic study. *J Gambl Stud* 2013;31:533–45.
10. Lang KB, Omori M. Can demographic variables predict lottery and pari-mutuel losses? An empirical investigation. *J Gambl Stud* 2009;25:171–83.
11. Resce G, Lagravinese R, Benedetti E, Molinaro S. Income-related inequality in gambling: evidence from Italy. *Rev Econ Household* 2019;17:1107–31.
12. Sulkunen P, Baber TF, Cisneros Ormberg J, et al. Setting limits. *Oxford University Press, 2018.*
13. Worthington AC. Implicit finance in gambling expenditures: Australian evidence on socioeconomic and demographic tax incidence. *Public Finance Rev* 2001;29:326–42.
14. Salonen A, Hagfors H, Lind K, Konttio J. Gambling and problem gambling in Finland 2019 Prevalence of at-risk gambling has decreased. THL, Statistical Report 9/2020. Helsinki, Finland, 2020.
15. Economist. The house wins Daily chart. Geographic detail. Charts, maps and infographics. 2014.
16. Browne M, Volberg R, Rockloff M, Salonen AH. The prevention paradox applies to some but not all gambling harms: results from a Finnish population-representative survey. *J Behav Addict* 2020;9:371–82.
17. Salonen A, Lind K, Hagfors H, et al. Rahapelilaaminen, peliengelmat ja rahapelilaamiseen liittyvät asenteet ja mielipiteet vuosina 2007–2019. Suomalaisten rahapelilaamisen 2019 [Gambling, problem gambling and attitudes and opinions towards gambling in 2007–2019]. Finnish Gambling 2019. Finnish Institute for Health and Welfare (THL). Report 18/2020. Helsinki, 2020.
18. Castrén S, Basnet S, Pankakoski M, et al. An analysis of problem gambling among the Finnish working-age population: a population survey. *BMC Public Health* 2013;13:519.
Disability among male employees 1223

Precarious work increases depression-based disability among male employees

Pasi Pyörä, Satu Ojala, and Jouko Nätti

Faculty of Social Sciences, Tampere University, Tampere, Finland

Correspondence: Pasi Pyörä, Faculty of Social Sciences, FI-33014 Tampere University, Finland, Tel: +358 503186188, e-mail: pasi.pyoria@tuni.fi

Background: Precarious employment is a potent occupational health risk, but little is known about its association with work-related disability and its causes. This study analyzes whether employment precariousness is associated with receiving disability pension (DP) due to depression and whether this differs according to gender. Methods: Statistics Finland’s Quality of Work Life Surveys (1997, 2003, 2008 and 2013) were merged with register-based DP data obtained from the Finnish Centre for Pensions. The survey material was used to measure employment precariousness using five variables: fear of job loss, low employability prospects, previous unemployment, low earnings and temporary contracts. We followed 20–60-year-old employees until 2016 and studied Cox proportional hazard ratios (HRs) for receiving DP among women and men, adjusting for sociodemographic covariates, working conditions and health at baseline. Results: The overall risk of receiving DP tended to increase as precarious job features accumulated. Among men, a higher risk of receiving DP due to depression was associated with previous unemployment [HR 2.2, 95% confidence interval (CI) 1.1–4.2] and poor employability (HR 2.4, 95% CI 1.3–4.7), whereas no corresponding association was found among women. Conclusions: Employment precariousness may reflect a psychological stress mechanism that predisposes the individual to mental health problems, predicting future disability. Work disability risk shows gendered differences depending on the cause of DP. Promoting employability at workplace and policy levels could offset the health risks associated with precariousness.

The European Journal of Public Health, Vol. 31, No. 6, 1223–1230
© The Author(s) 2021. Published by Oxford University Press on behalf of the European Public Health Association. This is an Open Access article distributed under the terms of the Creative Commons Attribution License (http://creativecommons.org/licenses/by/4.0/), which permits unrestricted reuse, distribution, and reproduction in any medium, provided the original work is properly cited. doi:10.1093/eurpub/ckab119 Advance Access published on 13 July 2021