

Gambling Participation and Problem Gambling Severity among Rural and Peri-Urban Poor South African Adults in KwaZulu-Natal

Andrew Dellis · David Spurrett · Andre Hofmeyr · Carla Sharp · Don Ross

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Abstract Poor South Africans are significantly poorer and have lower employment rates than the subjects of most published research on gambling prevalence and problem gambling. Some existing work suggests relationships between gambling activity (including severity of risk for problem gambling), income, employment status and casino proximity. The objective of the study reported here is to establish the prevalence of gambling, including at risk and pathological gambling, and the profile of gambling activities in two samples of poor South African adults living in a rural and a peri-urban community. A total of 300 (150 male, 150 female) adults in KwaZulu-Natal, South Africa in communities selected using census data, completed the Problem Gambling Severity Index and a survey of socioeconomic and household information, and of gambling knowledge and activity. It was found that gambling was common, and—except for lottery participation—mostly informal or unlicensed. Significant differences between rural and peri-urban populations

A. Dellis (✉)

Brain and Behaviour Initiative (BBI), Department of Psychiatry and Mental Health,
University of Cape Town, Private Bag X3, Rondebosch 7701, South Africa
e-mail: Andrew.dellis@uct.ac.za

A. Dellis · A. Hofmeyr · D. Ross

Research Unit in Behavioural Economics and Neuroeconomics (RUBEN), School of Economics,
University of Cape Town, Private Bag X3, Rondebosch 7701, South Africa
e-mail: Andre.hofmeyr@uct.ac.za

D. Ross

e-mail: Don.Ross@uct.ac.za

D. Spurrett

Philosophy, University of KwaZulu-Natal, Howard College Campus, Durban 4041, South Africa
e-mail: Spurrett@ukzn.ac.za

C. Sharp

Department of Psychology, University of Houston, Houston, TX, USA
e-mail: csharp2@Central.UH.EDU

D. Ross

Center for Economic Analysis of Risk, Georgia State University, Atlanta, GA, USA

were found. Peri-urban subjects were slightly less poor, and gambled more and on a different and wider range of activities. Problem and at risk gamblers were disproportionately represented among the more urbanised. Casino proximity appeared largely irrelevant to gambling activity.

Keywords Gambling · Problem gambling · Gambling participation · South Africa · Poverty · Income · Employment · Casino proximity

Introduction

Most South Africans are poor, and have had freer access to legal gambling since the mid 1990s when changes in regulation increased the availability of various legal gambling activities, including a national lottery and scratch card games associated with it. There are now licensed casinos in or near most South African cities. Until recently there has been little systematic study of gambling prevalence or pathological gambling among poor South Africans. There have been studies of national gambling prevalence, but the 2010 National Urban Prevalence Study of Gambling Behaviour (Ross et al. 2010) is the first using randomized sampling, and a locally validated instrument for assessing gambling severity. [The Problem Gambling Severity Index (PGSI) of the Canadian Problem Gambling Index (CPGI). See Sharp et al. (2011)] Determining the prevalence of at risk and pathological gamblers among the poor may help inform policy and the allocation of scarce mental health and related resources.

Poor South Africans are interestingly different from the lower income subjects of most existing published gambling research. Among the most salient socio-economic differences are that they are much poorer in financial terms, have significantly worse health indicators, and are less educated. All the countries where recent national or regional studies report poverty or employment related associations with severity of gambling (Australia, Canada, New Zealand, the United Kingdom and The United States of America) fall in the top eight countries in the ‘very high’ category of the United Nations Human Development Index. None of them has a life expectancy at birth of lower than 79 years, a value for mean years of schooling of fewer than 11.5 years, or a Gross National Product per capita (in 2008 PPP dollars) of less than \$25,000. South Africa is ranked 110th for human development, falling in the ‘medium’ human development category. Life expectancy at birth is 52 years, mean years of schooling 8.2 years, and GDP per capita is much lower at \$9,812 (United Nations Development Programme 2010). Official figures (as of late 2010) indicate that 25.3 % of the working age population is unemployed. The World Bank reports that 22 % of the total population lived below the poverty line in 2009, and that 38 % had done so in 2000 (Statistics South Africa 2010; World Bank 2009).

Studies in countries other than South Africa indicate that gambling severity can vary with differences in income and employment status, education, and with casino proximity. Given the large differences in socio-economic conditions between the populations in these studies and the South African poor, it is not clear what these findings suggest for South Africa.

The Diagnostic and Statistical Manual for Mental Disorders, Fourth Edition, Text Revision (4th ed., text rev; DSM-IV-TR; American Psychiatric Association 2000) classifies pathological gambling as an impulse control disorder, listing ten symptoms, exhibiting five or more of which indicates disorder. Problem—as opposed to pathological—gamblers exhibit three or four symptoms. In some recent literature exhibiting one or two symptoms

leads to classification as ‘at risk’ (e.g., Volberg et al. 2006). Problem gamblers outnumber pathological gamblers (Shaffer and Hall 2001), and are in turn outnumbered by at risk gamblers. Both non-pathological categories are of policy and public health interest because of the possibility that interventions may reduce the rate at which individuals move into more severe categories, and because there are significant negative correlates of problem gambling despite its lower severity (Grant et al. 2009).

Gambling prevalence studies, mostly made in developed democracies, typically report significant variation in prevalence of gambling and problem gambling within geographical regions, and with age, income, specific location and other factors. Some suggest that poorer individuals show relatively higher prevalence of problem gambling.

Welte et al. (2004) found that ‘neighborhood disadvantage’ (extracted from US Census data) was related to higher levels of problem or pathological gambling (using the Diagnostic Interview Schedule of the DSM IV). They found 12 times the rate of pathological gambling in the 10 % most disadvantaged neighbourhoods as in the least disadvantaged decile. A related study in the USA found that ‘low socioeconomic status’ was associated with higher gambling pathology (Welte et al. 2003). In California lower rates of gambling were found among those with annual household incomes lower than US\$25,000, and higher rates of problem gambling among those with household incomes lower than US\$50,000 in 2005–2006 (Volberg et al. 2006).

The 1999 New Zealand prevalence study found that current pathological gambling prevalence for people with household income below NZ\$20,000 was significantly higher than the rates corresponding to household incomes above NZ\$20,000 (Abbott and Volberg 2000).

In Australia having ‘lower’ incomes was associated with higher incidence of gambling problems (Dickerson et al. 1996). In the Australian Capital Territory in 2009 there was lower gambling participation at both income extremes. Lower personal income categories (under AUS\$40,000 per annum) were found to be associated—but not significantly—with higher rates of problem gambling (Davidson and Rodgers 2010, p. 80). In the Northern Territory of Australia incomes of below AUS\$20,000 per annum were associated with increased problem gambling (measured by SOGS) in 2005 (School for Social and Policy Research & School of Health Sciences 2006). In the United Kingdom low income was associated with increased prevalence of problem gambling in 1999, but not 2007 (Sproston et al. 2000; Wardle et al. 2007).

The relationship between employment status and gambling participation and severity varies between country and region. In New Zealand being employed was found to be positively correlated with problem gambling (Abbott and Volberg 2000). Conversely being unemployed or in part-time employment are predictors of higher rates of problem gambling in Australia (Delfabbro 1998, Davidson and Rodgers 2010), while in California the positive association is stronger (Volberg et al. 2006). In British Columbia, Canada, the highest prevalence of problem gamblers was found among the unemployed (9.7 %) and students (8.4 %). These rates were significantly higher than the rates for full time employed and part-time employed (3.9 and 3.4 % respectively) but not significantly higher than the overall average rate (Ministry of Public Safety and Solicitor General 2003, p. 44).

Some studies report associations of both participation and severity with casino proximity. Gerstein and others report that living within 50 miles of a casino in the USA was associated with about double the rate of pathological gambling as living 50–250 miles from one (Gerstein et al. 1999). Welte et al. (2004) found that living within ten miles of a casino was related to substantially higher levels of problem and pathological gambling (using the Diagnostic Interview Schedule of the DSM IV). Shaffer and others found the

highest rates of problem gambling in the four counties of Nevada with most access to casinos, and the lowest rates in the four counties with least access (Shaffer et al. 2004). Abbott and Volberg (2000) report that gambling participation and problem gambling prevalence in New Zealand are higher in the cities of Auckland and Christchurch, both of which contain large casinos, and that prevalence in those centres had increased with the opening of the casinos. This is consistent with a number of academic reviews and official studies (including Abbott and Volberg 1992; Shaffer et al. 1999; Wildman 1998; Gambling Review Body 2001; Committee on the Social and Economic Impact of Pathological Gambling, National Research Council 1999; Productivity Commission 1999) finding that increased availability of gambling for a population is, at least initially, followed by greater gambling participation and also greater incidence of problem gambling. Some studies report that the initial increase is followed by a reduction in prevalence (e.g., Abbott and Volberg 2000, comparing 1991 and 1999 data in New Zealand).

Fewer years of education have also been found to be associated with higher gambling participation rates and higher rates of problem and pathological gambling in recent prevalence reports for the Australian Capital Territory (Davidson and Rodgers 2010, p. 71, 78). In the United Kingdom, New Zealand, the Australian Northern Territory and California problem gamblers were less likely to have post-school education than people without gambling problems (Wardle et al. 2007; Abbott and Volberg 2000; School for Social and Policy Research & School of Health Sciences 2006; Volberg et al. 2006).

In summary, some existing prevalence surveys find higher rates of problem gambling among relatively low income subjects, but *lower* rates of gambling among the lowest income groups, as well as positive association between problem gambling rates and both neighbourhood disadvantage and casino proximity, but in all cases for populations that are on the whole substantially better off than the South African poor.

To begin to address the limitations in current knowledge of gambling, participation in gambling and correlates of gambling risk severity among the poor, we conducted a systematic study of gambling in two poor communities in the KwaZulu-Natal region of South Africa. We sought to build a detailed profile of gambling activity and knowledge of gambling types among adult members of these communities. In order to investigate whether proximity to legal casinos was associated with differences in patterns of gambling activity or risk severity, the communities were selected for being at varying distances from a major and relatively new casino complex. In contrast to the earlier national prevalence study (Ross et al. 2010) which focused only on urban subjects, neither community was fully urbanised. Instead one was rural, and the other peri-urban. The rural poor in South Africa live mostly in traditional mud dwellings, are poorer than their more urbanised counterparts, less well educated, and have less access to legal (non-lottery) gambling. The peri-urban poor mostly live in low-cost housing developments, or shack settlements.

Methods

Participants

Descriptive information concerning the sample ($N = 300$) is contained in Table 1. The sample was equally split by gender, with a mean age of 35 years (range: 18–81 years). By self-reported racial group, respondents were exclusively Black African and predominately first language Zulu speaking (97 %). Dwelling in rural areas was mostly in traditional huts (98 %), whereas in peri-urban areas respondents lived in shacks (33 %) or government

Table 1 Mean (*SD*) or *N* (%) for socio-demographic characteristic by area group

| Characteristic | Sample | Rural | Peri-urban | $t(296-298)/\chi^2(1)$ |
|---|-------------------|-------------------|-------------------|------------------------|
| <i>N</i> (%) | 300 (100.0) | 150 (50.0) | 150 (50.0) | – |
| Age | 35.08 (14.3) | 36.06 (15.4) | 34.09 (13.0) | <i>ns</i> |
| <i>Gender</i> | | | | |
| Male | 150 (50.0) | 75 (50.0) | 75 (50.0) | – |
| <i>Relationship status</i> | | | | |
| Married/cohabiting | 50 (16.5) | 27 (18.1) | 23 (15.4) | <i>ns</i> |
| Single | 244 (81.9) | 121 (81.2) | 123 (82.6) | <i>ns</i> |
| <i>Education</i> | | | | |
| Highest year ^a | 9.2 (3.3) | 8.5 (3.8) | 10.0 (2.5) | –4.2** |
| Grade 11 or more | 150 (50.3) | 65 (43.6) | 85 (57.0) | 5.4* |
| <i>Employment status</i> | | | | |
| Full-time employed | 59 (19.6) | 14 (9.3) | 45 (28.8) | 35.5** |
| Part-time employed | 38 (12.7) | 12 (8.0) | 26 (17.3) | 5.9* |
| Unemployed | 173 (57.7) | 112 (74.7) | 61 (40.7) | 20.3** |
| <i>Financial status (Rands)^b</i> | | | | |
| Personal income | 934.6 (1,437.4) | 544.0 (864.4) | 1,325.2 (1,758.4) | –4.9** |
| Household income | 2,836.1 (2,816.2) | 2,245.1 (1,456.2) | 3,443.4 (3,637.4) | –3.7** |
| Personal borrowing | 84.78 (404.6) | 24.9 (171.9) | 144.7 (540.0) | –2.6* |
| Child dependants | 0.6 (1.2) | 0.5 (1.0) | 0.8 (1.3) | –2.6* |
| <i>Household</i> | | | | |
| Household size | 4.8 (2.5) | 5.1 (2.2) | 4.5 (2.7) | <i>ns</i> |
| Living with offspring | 122 (40.7) | 65 (43.3) | 57 (38.0) | <i>ns</i> |
| Living together ^d | 71 (23.7) | 36 (24.0) | 35 (23.3) | <i>ns</i> |
| Living with older gen. | 106 (35.3) | 63 (42.0) | 43 (28.7) | 5.8* |
| Fraction of ≤5 year olds | 90 (30.0) | 47 (31.3) | 43 (29.7) | <i>ns</i> |
| Highest education ^c | 11.1 (2.0) | 10.8 (1.9) | 11.3 (2.0) | –2.3* |

^a Corresponds to grade 9, grade 8, grade 10 respectively

^b 1US dollar = 7.28Rands

^c Highest year. Corresponds to grade 11, grade 10, grade 11 respectively

^d Includes previous partner/spouse

* $p < .05$; ** $p < .01$

built low-cost housing (44 %). Very few respondents were married or in a relationship cohabiting (17 %), though by household composition 24 % claimed to be living with a (current or previous) spouse or partner. Education among respondents and household members was low. Only 50 % of respondents had completed Grade 11, which was also the average highest grade in households and is the second last year of high school in South Africa. Only 20 % of respondents were in full-time employment. Personal monthly income was low ($Mdn = R535$, or less than US\$100), as was household monthly income ($Mdn = R2070$, or about US\$700). Respondents lived in medium to large households ($Mdn = 5$, range: 1–16), with 30 % of household members 5 years old or under. By relatedness, 40 % of respondents lived with their own offspring and 35 % lived with parents or grandparents. Comparing groups, rurals reported significantly lower levels of

education (household and respondent), employment and financial status, and by household composition were more likely to be living with an older generation (i.e., parents or grandparents) than peri-urbans.

Face-to-face interviews were conducted with respondents from 6 rural and 5 peri-urban census defined regions or enumeration areas (EAs) in KwaZulu-Natal province, South Africa. We chose EAs based on a poverty profile compiled from consideration of 2001 census data, consultation with municipality and ward council representatives, local knowledge and site visits. As the extremely poor are often under-sampled in national surveys relating to gambling in South Africa, we were particularly interested in recruiting participants living in informal or low-cost housing on city outskirts (we refer to these participants as ‘peri-urbans’), as well as those living some distance from major cities typically in traditional housing (‘rurals’). Once areas had been selected, meetings were held with ward councillors and senior community members to brief them on the study aims and data collection timeframes. Skilled interviewers were trained in the survey design and employed to carry out interviews in the home language of respondents.

A random starting point in each selected area was chosen on areal photographic maps. Interviewers then located starting points based on geographical landmarks and GPS coordinates, and approached property locations by a defined random walk procedure. Households within property locations, and then adult (≥ 18 years) respondents within households, were randomly selected by grid method with a 50 % gender split. If a household refused to participate in the study, another household was selected based on the random walk procedure. If a selected respondent refused to participate, no internal substitution was allowed, and a new household was selected. Both households and respondents were approached on 3 separate occasions, at 3 different times of day (morning, afternoon, evening), over at least 2 days before substitution was allowed. All interviewed respondents gave their informed consent prior to taking part in the research. Interviews lasted approximately 1 h and participants were given a R100 (approximately US\$12–15) voucher for use at a major supermarket chain in compensation for their time. We also conducted two focus groups with convenience samples of community members and one with gamblers at an informal (unlicensed) gambling establishment.

All procedures and measures were approved by the Research Ethics Committee of the University of KwaZulu-Natal.

Measures

We used the National Urban Prevalence Study Questionnaire (Ross et al. 2010), along with supplementary questions relevant to the population of the present study. This survey was designed by the authors and was translated and back-translated into the 11 official South African languages. The content domains of the survey included knowledge of various forms of gambling, history of exposure to them, views about how accessible the various gambling activities were to them, and opinions about gambling. Accessibility was assessed by asking, for each gambling activity, “If you wanted to gamble, and you had some money, how easy would it be for you to...?”. Subjects who gambled were asked about their gambling history, participation, expenditure, and the locations in which they gambled. The schedule of specific gambling activities that subjects were asked about was adapted from the earlier national prevalence study, and informed by preparatory focus groups in the study areas.

In order to relate gambling knowledge and behaviour both to socio-economic factors and to gambling severity, respondents also completed the scored module of the CPGI, PGSI (Ferris and Wynne 2001). This screen consists of nine items scored on a four-point

scale (0 = Never, 1 = Sometimes, 2 = Most of the time, 3 = Almost always) framed over the past 12 months. The PGSI assesses problem gambling severity dimensionally (0–27) and categorically into ‘non-problem’ (0), ‘low risk’ (1–2), ‘moderate risk’ (3–7) and ‘problem’ (8+) gamblers.

Data Analytic Approach

We conducted descriptive analysis of gambling characteristics and severity among peri-urban and rural poor South African’s in KwaZulu-Natal. Severity of risk for problem gambling was examined by summed PGSI score and cut-offs used to group individuals into one of four risk categories. Rural and peri-urban group comparisons of gambling characteristics, as well as comparisons by gambling risk severity were conducted through Chi-square analysis, Spearman’s Rho, and ANOVA.

Results

Gambling Among the Peri-Urban and Rural Poor

Gambling Awareness and Participation

All respondents had heard of the National Lottery, while most had heard of informal betting games such as dice (92 %) or cards (96 %). Despite high levels of awareness of these activities, almost no respondents had heard of casino games such as roulette (3 %), and about half (55 %) had heard of slot machine gambling. The majority of respondents (68 %) had gambled at some time in their lives, but only 20 % had ever visited a casino, and only 2 % had done so in the previous month ($M = .03$ visits, $Max. = 2$, $SD = .22$). Despite this, regular gambling (daily, weekly or monthly) on at least 1 activity was common (41 %) though excluding those who gambled regularly on lottery only, this figure falls to 21 %. By gambling type, regular lottery (34 %), cards (12 %), scratch cards (11 %) and local games such as ‘coin spinning’ and ‘caps’ (5 %) had the highest prevalence, followed by regular slots (4 %) and dice (2 %). Regular sport and animal betting was reported by less than 2 % of respondents. With the exception of awareness of the lottery, gambling by area was significantly different on all indicators, with higher awareness, as well as higher lifetime and regular participation among the peri-urban group (see Table 2).

Gambling Expenditure

Among respondents who had ever gambled on any activity, the majority had spent the most money on lottery (47 %), followed by card (26 %), slot machine (8 %) and scratch card (5 %) gambling. This ranking was similar in both rural and peri-urban groups, except that slots had the lowest ranking among rurals. Indeed only 5 % of rurals had ever participated in slots at all, compared to 23 % of peri-urbans. The average reported amount of money spent the last time each of these activities was played was highest for cards ($M = R301$, $Mdn. = R100$, $SD = 764$), followed by dice ($M = R150$, $Mdn. = R50$, $SD = R370$), slots ($M = R174$, $Mdn. = R50$, $SD = R375$), lottery ($M = 22$, $Mdn. = R10$, $SD = R66$), scratch cards ($M = R15$, $Mdn. = 10$, $SD = R20$) and other ‘local’ games ($M = R12$, $Mdn. = R5$, $SD = 15$). The reported amount spent on less regular activities such as sports

Table 2 *N* (%) for gambling activity by area group

| Gambling activities | Sample | Rural | Peri-urban | $\chi^2(1)$ |
|--|------------|------------|------------|-------------|
| <i>Awareness</i> | | | | |
| Lottery | 297 (100) | 148 (100) | 149 (100) | <i>ns</i> |
| Scratch cards | 252 (84.8) | 114 (77.0) | 138 (92.6) | 14.0** |
| Card games | 283 (95.6) | 137 (93.2) | 146 (98.0) | 4.0* |
| Dice games | 271 (91.6) | 128 (87.1) | 143 (96.0) | 7.6* |
| Slot machines | 163 (55.3) | 65 (44.5) | 98 (65.8) | 13.5** |
| Roulette | 9 (3.1) | 1 (0.7) | 8 (5.4) | 5.5* |
| <i>Participation lifetime</i> | | | | |
| Ever gambled | 205 (68.3) | 79 (52.7) | 126 (84.0) | 34.0** |
| Ever visited a casino | 60 (20.1) | 9 (6.0) | 51 (34.2) | 37.1** |
| <i>Participation regular^a</i> | | | | |
| Regular gambler | 123 (41.3) | 36 (24.0) | 88 (58.7) | 37.2** |
| Regular casino visit | 6 (2.0) | 0 (0.0) | 6 (4.0) | 6.2 * |
| Regular gambler (excluding lottery) ^b | 67 (20.7) | 12 (8) | 50 (33.3) | 29.4** |
| Regular lottery | 101 (33.7) | 30 (20) | 71 (47.3) | 25.1** |
| Regular slots | 11 (3.7) | 0 (0.0) | 11 (7.3) | 11.4* |
| Regular cards | 36 (12) | 6 (4.0) | 30 (20.0) | 18.2** |
| Regular scratch cards | 32 (10.7) | 3 (2.0) | 29 (19.3) | 23.7** |
| Regular other local ^c | 14 (4.7) | 3 (2.0) | 11 (7.3) | 4.8* |

^a Daily, weekly, monthly combined

^b Excluding regular lottery only players

^c Including the games 'spinning' and 'caps'

* $p < .05$; ** $p < .01$

and animal betting was fairly high, an average of R237 (*Mdn.* = 70, *SD* = R634) and R88 (*Mdn.* = R28, *SD* = R162) respectively. By area group, respondents did not differ in the amount of money spent on the last occasion they gambled, with the exception of scratch cards where the average last amount spent was significantly higher among peri-urbans ($t = -2.2$, $df = 74$, $p < .05$). Among those who had ever gambled, average reported expenditure in the last month was R80 (*Mdn.* = 0, *SD* = R287), but was significantly higher among peri-urbans ($M = R122$, *SD* = R360) than rurals ($M = R14$, *SD* = R44) ($t = -2.7$, $df = 200$, $p < .01$). As might be expected average last month expenditure among regular gamblers was higher at R131 (*Mdn.* = 10, *SD* = R360), and even higher after excluding regular lottery only gamblers at R235 (*Mdn.* = R80, *SD* = R485).

Gambling Location

Subjects were asked about the locations in which they had *ever* gambled. Venues other than legal casinos and licensed gambling outlets were collectively classified as 'informal'. Reports indicated that 19 % had gambled *only* in 'informal venues', while 5 % had gambled *only* in 'legal casinos'. Among peri-urbans, 'informal venue only' gambling stood at 26 %, while 59 % had not visited any gambling venue ('none'), which includes 20 % who gamble on the 'lottery only'. The prevalence of 'informal' over 'legal casino' gambling is marked throughout but most distinct among the rural poor. In the overall sample,

the most common category of gamblers are ‘*informal only*’, followed by ‘*other legal and informal*’ (that is, not including casinos). 52 % of gambling among ‘regular gamblers’ is in ‘*informal only*’ venues, followed by gambling in ‘*other legal and informal venues*’ (15 %). Among ‘*regular gamblers*’ (excluding ‘lottery only’ gamblers), 8 % had visited a casino in the last month, all of whom lived in a peri-urban area. The majority of regular gamblers (excluding regularly lottery only gamblers) reported that they went gambling ‘some of the time’ (61 %) or ‘most of the time’ (13 %) with friends or family, while 18 % did so alone.

Access to Gambling

The gambling activity with easiest access (‘easy’ or ‘very easy’) was lottery (60 %, 40 % rural, 80 % peri-urban), followed by scratch cards (48 %), sport betting (31 %), coin spinning (22 %) and cards (20 %). Only 17 % of respondents said access to a casino would be ‘easy’ or ‘very easy’ (6 % rural, 30 % peri-urban). Apart from access to animal betting (e.g., on horse races) and ‘Fafi’ (which did not differ between area groups) peri-urbans reported significantly easier access to all gambling activities than rurals (Fafi/iChina is a lottery-like gambling activity where participants bet on numbers they take to have been revealed by dreams, and winners are randomly drawn). As might be expected access to gambling activities was perceived as easier by gamblers compared to non-gamblers (for all activities), as well as by regular gamblers compared to lifetime gamblers (for lottery, scratch cards, sport, casino, coin spinning). Comparing regular gamblers against regular lottery only gamblers revealed higher perceived ease of access among the former for sport gambling, dice, cards, caps, and coin spinning.

Gambling Exposure

The average age of gambling debut was 23 years and 21 % of gamblers reported recalling a ‘big win’ when they first started gambling. Among all respondents 23 % claimed to have been ‘often’ or ‘very often’ exposed to gambling when younger, and a fairly high number recalled gambling problems among friends (13 %) and family (10 %). Gambling exposure by area group was significantly different on every indicator, with higher exposure among peri-urbans (see Table 3). Gambling exposure also varied significantly by gambling frequency group. Thus compared to those who had ever gambled non-gamblers were less likely to have been exposed ‘often’ or ‘very often’ when younger to any form of gambling (30 vs. 8 %) ($\chi^2(1, N = 299) = 17.5, p < .01$) or to friends gambling (25 vs. 2 %) ($\chi^2(1, N = 298) = 23.5, p < .01$). Similarly compared to gamblers, non-gamblers were significantly less

Table 3 *M* (*SD*) or *N* (%) for gambling exposure when younger by area group

| Gambling exposure | Sample | Rural | Peri-urban | <i>t</i> (199)/ $\chi^2(1)$ |
|------------------------------|------------|-------------|------------|-----------------------------|
| Age at first gamble | 23.3 (9.3) | 25.2 (10.7) | 22.0 (7.8) | 2.5* |
| Remember making a big win | 56 (28.6) | 9 (12.2) | 47 (38.5) | 15.7** |
| Around any gambling | 70 (23.5) | 17 (11.3) | 53 (35.8) | 24.5** |
| Friends gambled ^a | 53 (17.8) | 11 (7.4) | 42 (28.4) | 22.1** |
| Friends had problem (297) | 38 (12.8) | 9 (6.0) | 29 (19.7) | 12.5** |
| Family had problem (297) | 31 (10.4) | 4 (2.7) | 27 (18.4) | 19.6** |

^a Often or very often

* $p < .05$; ** $p < .01$

likely to report exposure to gambling problems when younger among friends (18 vs. 2 %) ($\chi^2(1, N = 297) = 14.3, p < .01$) or family (14 vs. 3 %) ($\chi^2(1, N = 297) = 7.9, p < .05$). The same proportional differences were noted between regular gamblers and those who had ever gambled, on exposure to any gambling (45 vs. 9 %) ($\chi^2(1, N = 204) = 30.0, p < .01$), to friends gambling (33 vs. 13 %) ($\chi^2(1, N = 203) = 10.7, p < .05$), to friends with a gambling problem (25 vs. 6 %) ($\chi^2(1, N = 202) = 11.7, p < .05$), and to family with a gambling problem (18 vs. 8 %) ($\chi^2(1, N = 202) = 11.7, p < .05$). In addition proportionally more regular gamblers than lifetime gamblers recalled a big win when they first starting gambling (42 vs. 8 %) ($\chi^2(1, N = 196) = 26.8, p < .01$). Similarly, compared to regular ‘lottery only’ gamblers, regular gamblers were more likely to report exposure to any gambling when younger (67 vs. 27 %) ($\chi^2(1, N = 117) = 18.6, p < .01$), to friends gambling (51 vs. 15 %) ($\chi^2(1, N = 117) = 17.9, p < .01$), to recall having friends with problems (39 vs. 10 %) ($\chi^2(1, N = 116) = 13.8, p < .01$), family with problems (27 vs. 8 %) ($\chi^2(1, N = 116) = 7.4, p < .05$) and to report a big win when they first started (64 vs. 24 %) ($\chi^2(1, N = 112) = 18.7, p < .01$). Regular gamblers were also significantly younger than regular lottery only and non-regular gamblers at gambling debut ($M = 19.6$ vs. $M = 24.0, M = 24.9$).

Problem Gambling Among the Rural and Peri-Urban Poor

Severity

Screening criteria for ‘problem gambling’ were met by 2 % of respondents, while ‘moderate risk’ gambling was identified in a further 10 % (see Fig. 1) Consistent with differences in gambling participation rates, area groups differed in risk severity, with proportionally more peri-urban respondents represented in higher risk categories ($\chi^2(3, N = 300) = 39.8, p < .01$) (Kendal’s tau-b = .296, $p < .01$) (See Fig. 2). Indeed no problem gambling, and almost no (2 %) ‘moderate risk’ gambling, was found in the rural group, while 4 % of peri-urbans met criteria for problem gambling, and a further 18 % did so for ‘moderate risk’.

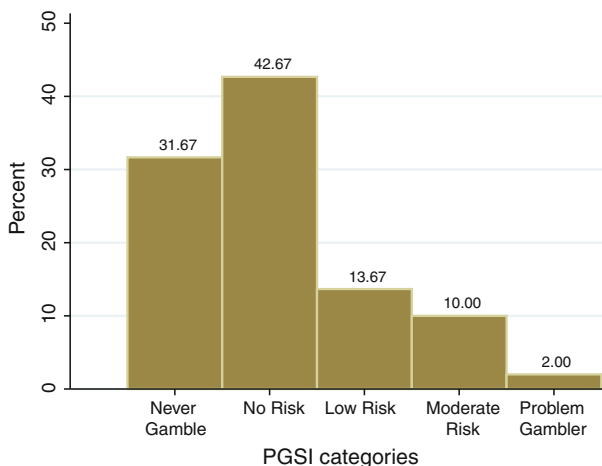


Fig. 1 Distribution (%) of respondents in problem gambling severity categories

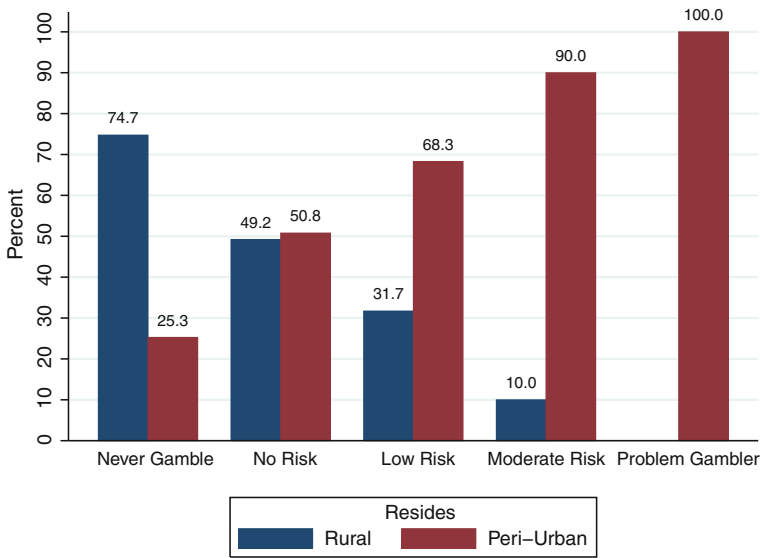


Fig. 2 Distribution (%) of rural and peri-urban respondents in problem gambling severity categories

Gambling Participation Among Moderate Risk and Problem Gamblers

As expected, severity of problem gambling increasing significantly with gambling participation ($\chi^2(12, N = 300) = 58.0, p < .01$) (Kendal’s tau-b = .43, $p < .01$) (see Fig. 3), with 11 % of regular gamblers meeting criteria for problem gambling. There were no problem gamblers among respondents who gambled regularly only on the lottery. As noted

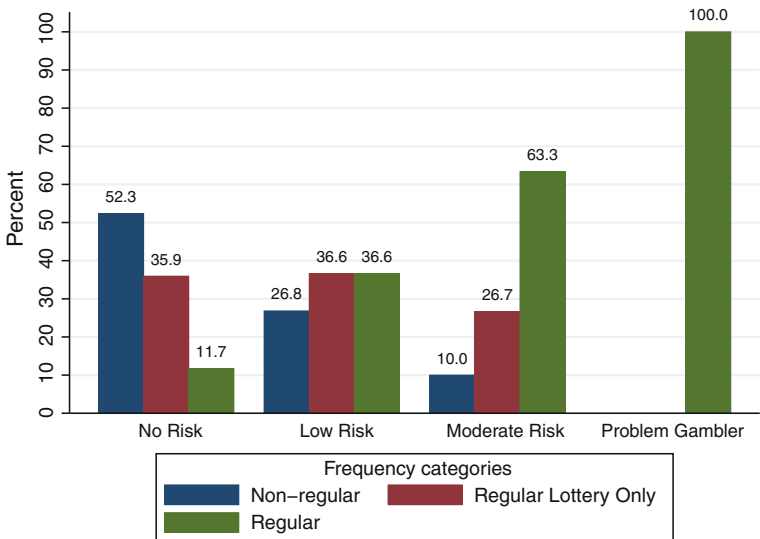


Fig. 3 Distribution (%) of gambling frequency groups in problem gambling severity categories

above, the moderate risk category of gambling severity is of policy and public health interest along with the problem gambling category. We consequently describe gambling activity among moderate risk and problem gamblers, and consider the socio-demographic characteristics of these groups.

Problem gamblers gambled regularly on a wider variety of activities compared to non-problem gamblers ($M = 2.8$, $SD = 1.5$ vs. $M = 0.9$, $SD = 0.1$) ($t = 2.2$, $df = 203$, $p < .01$), which was also true of moderate risk gamblers ($M = 1.7$, $SD = 1.2$ vs. $M = 0.7$, $SD = 0.9$) ($t = 8.49$, $df = 197$, $p < .01$). Among problem and moderate risk gamblers combined regular participation was 61 % for cards, 61 % for lottery, 30 % for scratch cards, 22 % for other or local games and 14 % for slots.

Expenditure, Location, Access and Exposure

Gambling spend was significantly different between risk severity groups, with average last month spend at R22 ($SD = R102$) for no risk, R148 ($SD = R482$) for low risk, R152 ($SD = R226$) for moderate risk and R483 ($SD = R768$) for problem gamblers.

Although respondents were significantly more likely to have ever visited a casino as risk severity increased ($\chi^2(4, N = 299) = 54.6$, $p < .01$) (Kendal's tau-b = .39, $p < .01$), only 50 % of problem and moderate risk gamblers had visited a casino at some point in their lifetime, and only 1 respondent (a problem gambler) had done so in the last month. As risk severity increased, so did perceived ease of access and perceived safety (see Table 4). There was no difference in attitude toward gambling restriction between severity groups. Reported frequent exposure when younger to any form of gambling and to friends gambling, as well as witnessing gambling problems among friends and family was significantly related to problem gambling severity (see Table 4). Problem and moderate risk gamblers were also significantly more likely to recall a big win when they first started gambling (see Table 4). Female problem gamblers were older at gambling debut than males ($M = 31$, $M = 18$), which increased the average age of this (small) group ($M = 27$), compared to moderate ($M = 19.8$), low ($M = 21.7$) and no risk ($M = 24.3$) groups. Among males, gamblers at problem and moderate risk started gambling at a significantly younger age than those at low and no risk ($M = 18.0$, $M = 17.5$ vs. $M = 20.8$, $M = 23.2$).

Socio-Demographic Characteristics of Problem Gambling

Age was not significantly related to severity of gambling risk or to regular gambling. Similarly sex was not related to risk severity, though men were significantly more likely than women to have ever gambled (75 vs. 61 %) ($\chi^2(1, N = 300) = 6.8$, $p < .01$) or to currently gamble regularly (excluding regular lottery only) (25 vs. 15 %) ($\chi^2(1, N = 300) = 5.2$, $p < .05$). Relationship status was not significantly related to risk severity or to regular gambling. Education was not related to risk severity, though those with more years of education were significantly more likely to have ever gambled ($M = 9.7$, $SD = 2.8$ vs. $M = 8.4$, $SD = 4.1$) ($t = 3.2$, $df = 296$, $p < .01$). Similarly those in full time employment were not more likely to be at risk for gambling problems, though the full time employed were more likely to have ever gambled (90 vs. 63 %) ($\chi^2(1, N = 300) = 15.7$, $p < .01$). Among those who had ever gambled, being part time employed was significantly related to risk severity. Specifically the part-time employed were more likely to be problem and moderate risk gamblers (34 vs. 15 %) ($\chi^2(1, N = 205) = 7.4$, $p < .05$).

Table 4 *N* (%) for gambling access and exposure by problem gambling severity group

| Gambling access and exposure | None | No risk | Low risk | Moderate Risk | Problem gambler | $\chi^2(4)$ |
|----------------------------------|-----------|-----------|-----------|---------------|-----------------|-------------|
| <i>Access^a</i> | | | | | | |
| Visit casino | 1 (1.1) | 23 (19.2) | 11 (28.2) | 12 (40.0) | 3 (50.0) | 34.3** |
| Scratch card | 1 (9.6) | 77 (61.1) | 27 (67.5) | 24 (80) | 5 (83.5) | 85.7** |
| Lottery ticket | 16 (16.8) | 92 (72.4) | 37 (90.2) | 28 (93.3) | 6 (100) | 115.3** |
| Sport betting | 6 (6.3) | 41 (32.3) | 22 (53.7) | 19 (63.7) | 4 (67.6) | 55.5** |
| Dice games | 1 (1.1) | 11 (8.7) | 11 (26.8) | 8 (26.7) | 2 (33.3) | 31.3** |
| Card games | 1 (1.1) | 20 (15.7) | 15 (36.6) | 20 (66.7) | 3 (50.0) | 74.8** |
| <i>Exposure</i> | | | | | | |
| Remember big win ^b | – | 18 (15.0) | 13 (31.7) | 20 (69.0) | 5 (83.3) | 43.0** |
| Friends gambled ^c | 2 (2.1) | 18 (14.3) | 13 (31.7) | 17 (56.7) | 3 (50.0) | 57.7** |
| Around any gambling ^c | 8 (8.4) | 24 (18.9) | 14 (34.1) | 19 (63.3) | 5 (83.3) | 54.7** |
| Friends had problem | 2 (2.1) | 15 (11.9) | 6 (15.0) | 12 (40.0) | 3 (50.0) | 37.3** |
| Family had problem | 3 (9.7) | 11 (8.8) | 7 (17.1) | 6 (20.0) | 4 (66.7) | 30.9** |

^a Easy or very easy

^b Among ever gambled (*n* = 205, valid *n* = 196)

^c Often or very often

* *p* < .05; ** *p* < .01

Self reported personal income was not related to risk severity or gambling regularity, but personal borrowing was significantly higher among problem gamblers compared to other gamblers (*M* = R842, *SD* = R1796.2 vs. *M* = R74.1, *SD* = R288.6) (*t* = 4.6, *df* = 203, *p* < .01). We also examined household characteristics in relation to gambling frequency and risk severity. Regular compared to non-regular gambling on any activity was significantly more common among gamblers from larger households (*M* = 4.4, *SD* = 2.6 vs. *M* = 5.2, *SD* = 2.1) (*t* = -2.172, *df* = 203, *p* < .05) though household size had no relationship with problem gambling risk severity. Regular gamblers (and Regular Lottery only gamblers) did, however, have significantly more financial dependents than Non-regular gamblers (*M* = 1.0, *M* = .9 vs. *M* = .4) (see Table 5), and problem gamblers were more likely to have more dependants than gamblers in other risk groups combined (*M* = 1.8, *SD* = 1.7 vs. *M* = .7, *SD* = 1.2) (*t* = 2.2, *df* = 203, *p* < .05).

Due to expected interrelationships among demographic variables we also examined the above findings by means of Ordinary Least Squares (OLS) regression analysis. We only included variables in our model that were not highly correlated with each other in order to avoid the effects of multicollinearity on individual predictors in our estimation. In the model part-time employment status and peri-urban area group membership were significantly and positively associated with problem gambling risk severity among those who had ever gambled (see Table 5).

Discussion

We aimed to investigate knowledge of gambling, participation in gambling and correlates of gambling risk severity (including casino proximity) among adults in two poor

Table 5 Regression analysis summary for socio-demographic characteristics predicting problem gambling severity among gamblers

| Variable | B | SEB | β | t |
|------------------------|------|-----|---------|--------|
| Constant | .32 | .59 | – | .54 |
| Male | .29 | .31 | .06 | .93 |
| Age in years | .00 | .01 | .00 | .10 |
| Education ^a | –.67 | .35 | –.14 | –1.89 |
| Part-time employed | .89 | .44 | .14 | 2.02* |
| Full-time employed | –.21 | .38 | –.04 | –.56 |
| Peri-urban | 1.49 | .32 | .31 | 4.58** |

$R^2 = .127$

^a Grade 12 or tertiary education

* $p < .05$

** $p < .01$

communities in the KwaZulu-Natal region of South Africa. We also sought to build a profile of gambling activity and knowledge of gambling types among adult members of these communities.

Comparing national gambling prevalence is complicated by variation in instruments for assessing gambling risk severity, only some of which are based on DSM criteria, and which vary in whether they assess lifetime gambling, or a smaller interval. Nonetheless, reported variation in prevalence of current problem gambling between countries is substantial, with a low of 0.2 % in Norway in 2003 (Lund and Nordlund 2003, using the South Oaks Gambling Screen (SOGS)—Lesieur and Blume 1987), through 0.5 % in Canada in 2003 (Cox et al. 2005, using PGSI), 0.5 % in New Zealand in 1999 (Abbott and Volberg 2000, using SOGS over past 6 months), 1 % in Iceland in 2005 (Olasun et al. 2003, using PGSI) up to 4.3 % in Macau in 2003 (Ka-Chio Fong and Ozorio 2005, using the Chinese DSM IV) and 5.3 % in Hong Kong in 2005 (Home Affairs Bureau 2005, also using the Chinese DSM IV). Problem gambling prevalence in Macau and Hong Kong, then, is approximately 20 times higher than in Norway and Canada. The 2009 urban prevalence study of South Africa estimated current problem gambling prevalence at 3 %, with a further 7 % of subjects scoring at ‘moderate risk’ (Ross et al. 2010, using the CPGI). This indicated relatively high levels of problem gambling in South Africa, by international standards.

As noted in the introduction above, previous studies indicate that gambling prevalence is lower among the poorest income groups, and severity sometimes higher in those near but not at the bottom. The bottom income categories in these countries are, though, substantially better off than poor South Africans. A household income of 20,000 New Zealand Dollars, for example, is nearly twice the average annual household income in South Africa, and about six times higher than the household income for the lowest three income deciles in South Africa (Statistics South Africa 2008).

We found that over a third of a sample of poor South African adults gambled regularly, and two thirds have gambled at some time. Those who gambled regularly spent large fractions of their small incomes: regular non-lottery gamblers reported spending about 25 % of their mean personal income, or nearly 10 % of mean household income (monthly figures) on gambling. In nominal terms this is approximately equivalent to spending around US\$30 on gambling from a monthly income of under US\$150. These findings are interesting in at least two ways. Firstly, the tendency noted above for less gambling among the

lowest income groups in some other countries does not, it seems, represent a finding about absolute income and gambling prevalence. If it did, then gambling would be almost nonexistent among the subjects surveyed here. Secondly, it does not even suggest a general within-country pattern of 'less gambling among the poorest', since the fraction of urban South Africans who had never gambled in a recent national urban prevalence survey was 43 % (Ross et al. 2010), a figure that is lower than among our sample of poor subjects, where less than 32 % had never gambled, and only 16 % of the urban poor had never gambled.

Despite their sharing a single language and culture, there were also marked differences between the rural and peri-urban populations surveyed. The more urbanised subjects were much more likely to have completed high school and be employed (although unemployment was still over 40 %). They earned more, were less likely to share a household with members of an older generation, and had easier access to gambling of most kinds. Among the peri-urban group the rates of ever having gambled, of gambling regularly, of having ever visited a casino, and of being at risk or a problem gambler were higher, and the age of first gambling lower.

Problem gamblers accounted for 2 % of our sample, which is close to the reported national prevalence (3 %). Moderate risk gamblers made up an additional 10 % of the sample, which is higher than the national South African rate (8 %) and the rate for Durban, the largest city in KwaZulu-Natal, on the periphery of which our peri-urban subjects lived (7 %). Among our peri-urban subjects the rate of problem gambling was higher than the national rate, and the rate of moderate risk gambling considerably higher, at 18 %, than both the national and Durban rates.

These high rates of gambling do not for the most part correspond to successful operation of regulated gambling businesses. With the exception of the national lottery (and spin off scratch card games) most gambling by poor adults in KwaZulu-Natal was informal, unlicensed or (less euphemistically) illegal. Proximity of a licensed casino appeared to be largely irrelevant to the lives of poor South African gamblers. The majority had never visited a casino, and most had never heard of paradigmatic casino games such as roulette, although subjects with higher gambling risk severity were more likely both to know about and have visited a casino. While gambling on the national lottery and associated games was very common, no 'lottery only' gamblers were problem gamblers.

It is striking that sex did not appear to be a factor in gambling risk severity, even though (as elsewhere) gambling among the sampled population was more widespread among males. Education did not appear as a factor either, but the variation in individual educational attainment between subjects was fairly small, and most subjects were less well educated than those in the developed world. The relatively high rates of participation and severity among our subjects are thus consistent with studies in developed countries. The part-time employed were (among those who had ever gambled) disproportionately likely to be problem and at risk problem gamblers. This pattern is different to that in countries noted above, which found the highest rates of problem gambling among the unemployed. It is possible that unemployed South Africans simply could not afford to gamble enough to develop symptoms.

Gambling behavior patterns and factors associated with severity of gambling risk were thus interestingly different in these samples from a developing country than those in wealthier country settings. There, as noted, gambling participation has been found to be lower among the lowest income groups. Further work in other middle and low-income environments would help determine whether gambling risk severity shows distinctive patterns associated with human development and poverty levels, since this would be

relevant to the determination of optimal policies aimed at mitigation of harms arising from gambling.

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Ethics All procedures and measures were approved by the Ethics Review Board of the University of KwaZulu-Natal. Participants gave their informed consent prior to their inclusion in the study.

Conflict of interest The authors declare that they have no conflict of interest.

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