# Impact of Legalized Gambling on Gambling Behaviour and Monetary Benefits to the State Government : Evidence of Trade-off from Sikkim

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## Abstract

A high rate of prevalence of problem gambling represents an urgent public health issue in many countries. Excessive gambling behaviour of a gambler not only affects the gambler, but it also affects and influences his/her family and the life of the people living around him/her. This paper aimed to identify the prevalence of problem gambling among the gamblers of Sikkim and highlight the amount of revenue generated from the casino industry and the state lotteries in Sikkim. The prevalence of problem gambling was identified using the Problem Gambling Severity Index. Based on the scores of the Problem Gambling Severity Index, 26.3% of the gamblers in Sikkim were categorized as problem gamblers and 47.5% of them were categorized as moderate-risk gamblers. In terms of revenue generation, from the period between 2011–12 and 2017–18, the Government of Sikkim generated revenue of about ₹ 2,274 million from its state lottery and ₹ 350.46 million from its casino industry. Although the revenue generated from the gambling industry in Sikkim is increasing, the high rate of prevalence of problem gambling is a matter of great concern.

*Keywords :* problem gambling, casinos, lottery, Tambola, gamblers, Sikkim

JEL Classification Codes : I12, L83, Z21

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Gambling in India has been in existence since ancient ages (Benegal, 2013), and is a part of the Indian culture and society. The Public Gambling Act of 1867 governs the gambling laws in India and only a handful of states offer some forms of legal gambling. Thirteen Indian states offer state-run lotteries, six states offer horseracing, and two states and one union territory offer casino gambling. Moreover, festival gambling and illegal betting in sports are also very prevalent among the Indian gamblers (Jaisoorya et al., 2017).

Sikkim is one of the states in the North-Eastern part of India and is one of the premium legalized gambling destinations after Goa. Gambling was legalized in Sikkim in 2009 with the enactment of the Sikkim Online Gaming (Regulation) Act, 2008. Various gambling games such as roulette, blackjack, poker, keno, and casino were legalized with the issuance of the act in the state (G3 Newswire, 2014). Today, there are three casinos operating in Sikkim namely, Casino Mahjong, Royal Casino, and Casino Deltin Denzong. In addition to casinos, the state of Sikkim also operates in paper and state lotteries.

The Government of Sikkim generates substantial revenue from its gambling industry. During the financial year

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2017–18, the Government of Sikkim generated a total revenue of around ₹ 419.8 million and ₹ 61.44 million from its state lotteries and casinos, respectively. On the other hand, existence of legalized gambling market in an economy can result in several social issues such as the issue of addictive behaviour towards gambling, that is, problem gambling. Ferris and Wynne (2001) defined problem gambling as a, "Gambling behaviour that creates negative consequences for the gambler, others in his or her social network, or for the community" (Ferris & Wynne, 2001, para.10).

Legalized gambling in an economy usually has an impact related to economic benefits in terms of revenue and employment generation, and social impact emerging because of problem gambling. Liberalization of casinos and gambling reforms had a significant impact on the economic development in economies such as Las Vegas and Macau. Development and liberalization of casinos in Macau had a significant impact in terms of GDP growth rate and helped Macau's economy to cope up with the global financial recession (Wan, Li, & Kong, 2011; Zheng & Hung, 2012). The development of casinos and other forms of gambling offer significant employment opportunities for the locals. The gambling industry is a major employer in many different countries. Macau's gambling industry witnessed a significant increase in the employment generation of 10.5%, 16.1%, and 20% during 2004, 2006, and 2008, respectively (Zheng & Hung, 2012).

On the other hand, legalized gambling often results in issues related to the prevalence of problem gambling in an economy. The prevalence of problem gambling represents a significant public health issue. Problem gambling can have a profound impact on the individual and result in several adverse consequences (George, Velleman, & Nadkarni, 2017). While gambling, gamblers also often get involved in the consumption of alcohol and substance abuse that result in gamblers being more involved in gambling and increased bets (Bussu & Detotto, 2015). Gambling behaviour of individuals not only affects their health, but it also influences the lives of the people living around them. Their gambling behaviour affects those family members who live in closer proximity and are dependent upon them, both financially and emotionally (Goodwin, Browne, Rockloff, & Rose, 2017). Family members have to bear the responsibility of financial distress caused by the gambling behaviour of the gambler, because of which even the family members experience substantial anger and anxiety (Mathews & Volberg, 2013).

Problem gamblers also incur several costs upon the society identified as social costs of gambling, and includes cost such as employment cost, bad debts, thefts, and criminal justice cost, therapy and welfare, regulatory costs, and family costs (Thompson, Gazel, & Rickman, 2000 ; Thompson & Schwer, 2005). Studies found that the societal cost of a problem gambler can range from $8,681 (Thompson et al., 2000) to $19,711 (Thompson & Schwer, 2005).

Studies on the prevalence of problem gambling in India are rare and scanty. The available literature has focused on identifying the levels of problem gambling among the younger gamblers, generally adolescents (Gonmei, 2016) as well as high school (Jaisoorya et al., 2017) and college students (George et al., 2016). The prevalence rate of problem gambling among gamblers in India was found to be 7.4% (George et al., 2016), 7.1% (Jaisoorya et al., 2017), and 1.8% (Gonmei, 2016), respectively. All of these studies were conducted in Kerala (George et al., 2016; Jaisoorya et al., 2017) and Manipur (Gonmei, 2016), where lottery is the only legal form of gambling. However, majority of gamblers who took part in the study reported participating in other forms of gambling such as sports betting in cricket and football, cards, and Bingo. As such, there is a possibility that problem gambling in such states may be linked with consequences of participation in the illegal gambling market. In the present study, we explore whether a state should run legalized gambling activities at the cost of social consequences arising out of it to its residents? A trade-off analysis is necessary to be carried out to answer this question.

Sikkim is one of the few states in India, where several forms of gambling such as casinos, online gambling, and lotteries are legal. As such, the focus of the study is on identifying the level of problem gambling, the association between various demographic variables, and the forms of gambling. Further, the study shall attempt to make a trade - off analysis between the social cost (problem gambling) and the amount of revenue generated from casino gambling and State lotteries.

## Review of Literature

Problem gambling is a significant public health issue, with many countries having high prevalence rates (Stucki & Rihs - Middel, 2007). It is recognized as a significant public health concern in many countries (Delfabbro, 2013). Excessive gambling can have a profound impact on individuals and their families, and result in several adverse consequences (George et al., 2017). Problem gamblers have reported experiencing problems related to finance, mental health, relationship problems, work or school problems, and engagement in illegal activity (Williams, Lee, & Back, 2013). The impact of problem gambling goes beyond the problem gamblers and affects their family members, friends, and the society as a whole (Banks, Andersson, Best, Edwards, & Waters, 2018; Raylu, Loo, & Oei, 2013). Gambling behaviour of the problem gamblers affects and influences the lives of those family members who live in closer proximity and are dependent upon them, both financially and emotionally (Goodwin et al., 2017). Banks et al. (2018), in their study, proclaimed that 93% of the family members of a problem gambler witnessed an influence on their financial security, and 64% of them reported the impact to be significant.

Several demographic variables such as age, gender, employment status, and educational qualification also have a profound impact on the frequency of gambling (Lam, 2007), and the type and the number of games the gamblers play also influence the behaviour among the gamblers (Holtgraves, 2009b). In terms of gender, problem gamblers are more likely to be male (Cavalera et al., 2018), and the rate of participation and involvement is also significantly higher among the male gamblers in comparison to female gamblers (Adams, Sullivan, Horton, Menna, & Guilmette, 2007). In a gender stratified analysis conducted by Afifi, Cox, Martens, Sareen, and Enns (2010), it was found that the increased odds of problem gambling among female gamblers were mostly associated with middle age, middle to low-income levels, lower education, and their being unmarried ; whereas, males were more likely to start gambling at an early age (Afifi et al., 2010), and the rate of problem gambling among the emerging male adults was more likely to be more than three times than the female gamblers (Wong, Zane, Saw, & Chan, 2013).

Forms of gambling also have an association with the level of problem gambling among the gamblers. Several studies have been conducted to identify the association between different forms of gambling and gambling behaviour. Binde, Romild, and Volberg (2017) identified that some forms of gambling such as electronic gaming machines, casino games, Poker, and Bingo were more closely associated with problem gambling. Scalese et al. (2016), in their study, identified that slot machines had a greater association with problem gambling followed by sports betting ; whereas, Abbott, Stone, Billi, and Yeung (2016) found that problem gambling behaviour was strongly associated with gamblers gambling in casinos and electronic gaming machines (EGM). Welte, Barnes, Tidwell, and Hoffman (2009) found out that casino gambling was the highest contributor of problem gambling. Availability and easy access to commercial gambling in Hong Kong and Macao were one of the reasons for the higher prevalence rates of problem gambling in comparison to the same in U.S., Australia, and other European countries (Chan, Li, & Leung, 2016).

Few existing studies on the prevalence of problem gambling in India suggest the presence of problem gambling among the Indian gamblers.

Table 1 highlights some of the studies on the prevalence of problem gambling in India and the rates of problem gambling. Gonmei (2016), George et al. (2016), and Jaisoorya et al. (2017) used different gambling screening tools for identifying the level of problem gambling among the Indian gamblers. Gonmei (2016) used the DSM-IV-J instrument, which is a revised version of DSM-IV designed for identifying problem gambling among children and adults, while George et al. (2016) and Jaisoorya et al. (2017) used NODS-CLiP for identifying the level of problem gambling among college and high school students. Based on DSM-IV, NODS-CLiP is a three-item screening tool assessing the loss of control, preoccupation, and lying to classify the level of problem gambling among the gamblers (Toce - Gerstein, Gerstein, & Volberg, 2009 ; Volberg, Munck, & Petry, 2011). The

**Table 1. Prevalence Rates of Problem Gambling in India**

| Researchers | Sample Size | Instrument Used | Prevalence Rate |
|---|---|---|---|
| Benegal (2013) | 108 | Problem Gambling Severity Index | 7.4% |
| George et al. (2016) | 5,580 | NODS-CLiP | 7.4% |
| Gonmei (2016) | 384 | DSM-IV-J | 1.8% |
| Jaisoorya et al. (2017) | 4,989 | NODS-CLiP | 7.1% |

prevalence of problem gambling among those who have ever gambled is very high in India in comparison to their Western equivalents (George et al., 2017). The rate of problem gambling among those who have ever gambled was about 25.2% (Jaisoorya et al., 2017) and 38.1% (George et al., 2016). Many of these problem gamblers were mostly adolescent gamblers, and this is a matter of great concern.

Studies on the prevalence of problem gambling in India have been carried out in Kerala and Manipur, where the lottery is the only legal form of gambling. However, such studies have not been carried out in the states of Goa and Sikkim, where most forms of gambling are legal. This paper is an attempt to fill the research gap existing in the literature and to provide an insight into the prevalence of problem gambling among the gamblers of Sikkim. The paper will also provide an analysis of the amount of revenue generated from the casinos in Sikkim and the Sikkim state lottery and thereby addressing the issue of trade-off between the two (levels of problem gambling and the state revenue generated out of the gambling business) to the policy makers. Keeping the above research gap in mind, this paper aims at achieving the following objectives :

**(i)** To highlight the amount of revenue generated from the Sikkim state lottery and casinos in Sikkim.

**(ii)** To measure the level of problem gambling among the gamblers of Sikkim.

**(iii)** To find out the association between the levels of problem gambling and various demographic variables & various forms of gambling.

**(iv)** To make a trade-off between the levels of problem gambling and the state revenue generated out of such legalized gambling activities.

## Methodology

Both primary and secondary data have been used for achieving the objectives of the study. Secondary data for revenue generated by the State from various forms of gambling activities were collected from the Directorate of Sikkim State Lotteries, Finance, Revenue and Expenditure Department, Government of Sikkim.

Primary data for measuring the gambling severity among the gamblers of Sikkim were collected using a reliable scale of Ferris and Wynne (2001). The scale included questions related to the demographic characteristics of the respondents and the 9-items for measuring the Problem Gambling Severity Index. The PGSI measure is designed specifically to be used for the general population (Holtgraves, 2009a). All the items in the PGSI measure are scored on a 5 - point Likert scale ranging from *never* (0) to *almost always* (4). Gamblers scoring 0 are categorized as no - risk gamblers, 1–2 are categorized as low risk gamblers, 3–7 are categorized as moderate risk gamblers, and 8 or more are categorized as problem gamblers. Cronbach's alpha for the current study was $\alpha = 0.75$.

The survey was conducted in the state of Sikkim and covered three districts of Sikkim, that is, East District, West District, and South District. The survey was conducted during the period between December 2018 – March 2019. Questions were asked about the various demographic variables of the respondents such as age, gender, marital status, educational qualification, employment status, and monthly income and participation in different

**Table 2. Demographic Profile of the Participants (Frequency Table)**

|  |  | Number (*n* = 80) | % |
|---|---|---|---|
| Gender | Male | 68 | 85% |
|  | Female | 12 | 15% |
| Age Class |  |  |  |
|  | 18–24 | 15 | 18.8% |
|  | 25–34 | 47 | 58.8% |
|  | 35–44 | 13 | 16.3% |
|  | 45–54 | 4 | 5% |
|  | Above 55 | 1 | 1.3% |
| Marital Status |  |  |  |
|  | Single | 46 | 57.5% |
|  | Married | 33 | 41.3% |
|  | Divorced | 1 | 1.3% |
| Educational Qualification |  |  |  |
|  | 12th or below | 27 | 33.8% |
|  | Graduate | 31 | 38.8% |
|  | Master's | 29 | 23.8% |
|  | Other | 3 | 3.8% |
| Employment Status |  |  |  |
|  | Employed | 31 | 38.8% |
|  | Job seeker | 14 | 17.5% |
|  | Self employed | 23 | 28.8% |
|  | Daily wagers | 12 | 15% |
| Monthly Income (in ₹) |  |  |  |
|  | Below 10,000 | 36 | 45% |
|  | 10,000 – 19,999 | 25 | 31.3% |
|  | 20,000 – 29,999 | 10 | 12.5% |
|  | 30,000 – 39,999 | 5 | 6.3% |
|  | Above 40,000 | 4 | 5% |

forms of gambling (online gambling, casinos, Tambola, and others). The Problem Gambling Severity Index was administered to identify the level of problem gambling among the gamblers. Using judgmental sampling, 80 respondents were selected from different gambling venues and fairs organized in the state of Sikkim in January 2019. Respondents were selected for the study based on the criteria that they were actively taking part in different gambling games in different venues and fairs. Among 80 respondents covered in the survey, 30 respondents needed our assistance in understanding the questions and filling out the information. About 85% of the respondents covered in the survey were male (*n* = 68) and 15% of the respondents were female (*n* = 12). Table 2 highlights the detailed demographic characteristics of the participants covered during the survey.

## Analysis and Results

**(1) Revenue Generated from Lottery in Sikkim :** One of the most predominant forms of gambling is the lottery, which generates a substantial amount of revenue for the State (Costes, Kairouz, Monson, & Eroukmanoff, 2018).

**Table 3. Amount of Funds Generated from Sikkim State Lottery**

| Sr. No. | Period | Funds Generated (in million) |
|---|---|---|
| 1 | 2011–12 | 286.3 |
| 2 | 2012–13 | 317.5 |
| 3 | 2013–14 | 328.2 |
| 4 | 2014–15 | 313.7 |
| 5 | 2015–16 | 248.1 |
| 6 | 2016–17 | 360.4 |
| 7 | 2017–18 | 419.8 |
| | Total | 2,274 |

Source : Directorate of Sikkim State Lotteries, Finance, Revenue & Expenditure Department, Government of Sikkim (n.d.a., n.d.b.).

Sikkim is among one of the 13 states in India where lottery is legal. The first scheme for state lotteries in Sikkim was notified in 1972, and the first lottery scheme was introduced in 1978 by the State government. The aim of introducing the lottery was to utilize the proceeds generated from the lottery for developmental activities and welfare of ex-servicemen in Sikkim. As per the Lottery Regulation Rule, 2010, the Sikkim state lottery organizes 24 draws per day, and six bumper draws in a calendar year. The Government of Sikkim is conducting both paper-based lotteries as well as online lotteries (Comptroller and Auditor General of India, 2017).

Table 3 highlights the amount of funds generated from the Sikkim state lottery from the period from 2011–12 until 2017–18.

The Government of Sikkim is generating a large amount of revenue from the lottery. From the period between 2011–12 and 2017–18, the Government of Sikkim generated revenue of ₹ 2,274 million. The revenue generated from the lottery increased from ₹ 286.3 million in 2011–12 to ₹ 419.8 million in 2017–18. Only during the financial year 2015–16, the amount of revenue generated from the lottery declined by a huge margin. The reason behind the sharp decline in the amount generated during the period was due to the suspension of paper lottery during the period from July 13, 2015 until June 5, 2016 (Comptroller and Auditor General of India, 2017). There has been an increase in revenue after the period of suspension of the paper lotteries.

**Table 4. Amount of Funds Generated from Casinos in Sikkim (in million)**

| Sr. No. | Period | Casino Casino Mahjong Mayfair | Sikkim Royal Plaza | Casino Deltin Denzong | Total |
|---|---|---|---|---|---|
| 1 | 2011–12 | 53.35 | 4.25 | - | 57.60 |
| 2 | 2012–13 | 8.80 | 4.25 | - | 13.05 |
| 3 | 2013–14 | 12.70 | 23.99 | - | 36.69 |
| 4 | 2014–15 | 25.15 | 7.35 | - | 32.50 |
| 5 | 2015–16 | 41.14 | 11.30 | - | 52.44 |
| 6 | 2016–17 | 28.07 | 15.81 | 52.86 | 96.74 |
| 7 | 2017–18 | 26.78 | 14.16 | 20.50 | 61.44 |
| | Total | 195.99 | 81.11 | 73.36 | 350.46 |

Source : Directorate of Sikkim State Lotteries, Finance, Revenue & Expenditure Department, Government of Sikkim (n.d.a., n.d.b.).

**(2) Revenue Generated from Casinos in Sikkim :** Sikkim is among one of the two Indian states which offer casino gambling. Licenses to casino operators in the state are granted through The Sikkim Casino Games (Control and Tax Rules), 2002, while the Sikkim Regulation of Gambling (Amendment) Act, 2005 provides the government the power to authorize casinos in the state. Three casinos are operational in the state namely, Casino Sikkim, Casino Mahjong, and Delta Crop.

Table 4 highlights the amount of funds generated from casinos in Sikkim. During the period between 2011–12 and 2017–18, the Government of Sikkim generated a total of around ₹ 350.46 million from the three casinos which are operational in the state of Sikkim. Of the three casinos, Casino Mahjong located in Mayfair contributed the maximum amount of funds, ₹195.99 million during the period between 2011–12 and 2017–18 followed by Casino Sikkim located at Royal Plaza, which generated ₹ 81.11 million during the same period. Casino Deltin Denzong located at Denzong Regency, which started its operations in Sikkim much later, generated ₹ 73.36 million during the period between 2016–17 and 2017–18.

**(3) Prevalence of Problem Gambling in Sikkim :** The prevalence of problem gambling among the gamblers of Sikkim has been measured using the Problem Gambling Severity Index (Ferris & Wynne, 2001). The main survey for the study was conducted during the period between November 2018 – February 2019.

The prevalence rates of problem gambling in Sikkim are highlighted in  Table 5. A total number of 80 respondents were included in the study. All the respondents had gambled in at least one form of gambling during the past 12 months. Based on the analysis of the results provided by the respondents, it has been observed that 26.3% of the respondents are problem gamblers ; whereas, 47.5% of the respondents are moderate risk gamblers.

**(4) Association Between Demographic Variables and Levels of Problem Gambling :** This study provides an analysis of gambling participation and the rates of prevalence of problem gambling among different gamblers of Sikkim. The descriptive statistics reported in Table 6 highlight the demographic characteristics and the rate of prevalence of problem gambling among 80 sample respondents.

Table 6 highlights the various demographic characteristics of the respondents and their gambling behaviour based on risk categories. The prevalence of problem gambling is higher among the male gamblers (27.9%) than among the female gamblers (16.7%). The results of this study are consistent with the results of the previous studies, which identified that the rate of prevalence of problem gambling was high among the male gamblers than among the female gamblers (Cavalera et al., 2018 ; Griffiths & Barnes, 2008). The level of problem gamblers increases with respect to age and this suggests that gamblers in Sikkim are more likely to become problem gamblers as their age increases. The age of one of the respondents was above 55 years, who happened to be divorced and is classified as a problem gambler ; 45.5% of the married gamblers are classified as problem gamblers, while only 10.9% of the bachelors are classified as problem gamblers. However, 52.2% of the bachelor gamblers are classified as moderate-risk gamblers, a higher percentage than 42.4% married gamblers who are classified as moderate-risk gamblers. The level of education also has a significant association with the level of

**Table 5. Prevalence Rates of Problem Gambling in Sikkim**

|  | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|
| Non-Problem Gamblers | 8 | 10.0 | 10.0 | 10.0 |
| Low Risk Gamblers | 13 | 16.3 | 16.3 | 26.3 |
| Moderate Risk Gamblers | 38 | 47.5 | 47.5 | 73.8 |
| Problem Gamblers | 21 | 26.3 | 26.3 | 100 |
| **Total** | **80** | **100** | **100** | |

**Table 6. Demographic Characteristics and Gambling Behaviour by Risk Categories**

| | | Non - Problem Gamblers | Low Risk Gamblers | Moderate Risk Gamblers | Problem Gamblers |
|---|---|---|---|---|---|
| Gender | Male | 11.8% | 14.7% | 45.6% | 27.9% |
| | Female | 0.0% | 25.0% | 58.3% | 16.7% |
| Age Class | | | | | |
| | 18 – 24 | 20.0% | 13.3% | 66.7% | 0.0% |
| | 25 – 34 | 8.5% | 19.1% | 46.8% | 25.2% |
| | 35 – 44 | 7.7% | 7.7% | 46.2% | 38.5% |
| | 45 – 54 | 0.0% | 25.0% | 0.0% | 75.0% |
| | Above 55 | 0.0% | 0.0% | 0.0% | 100.0% |
| Marital Status | | | | | |
| | Single | 15.2% | 21.7% | 52.2% | 10.9% |
| | Married | 3.0% | 9.1% | 42.4% | 45.5% |
| | Divorced | 0.0% | 0.0% | 0.0% | 100.0% |
| Educational Qualification | | | | | |
| | 12th or below | 0.0% | 7.4% | 48.1% | 44.4% |
| | Graduate | 12.9% | 19.4% | 48.4% | 19.4% |
| | Master's | 21.1% | 26.3% | 42.1% | 10.5% |
| | Others | 0.0% | 0.0% | 66.7% | 33.3% |
| Employment Status | | | | | |
| | Employed | 16.1% | 22.6% | 48.4% | 12.9% |
| | Job seeker | 14.3% | 21.4% | 50.0% | 14.3% |
| | Self employed | 4.3% | 4.3% | 47.8% | 43.5% |
| | Daily wagers | 0.0% | 16.7% | 41.7% | 41.7% |
| Monthly Income (in INR) | | | | | |
| | Below 10,000 | 5.6% | 16.7% | 55.6% | 22.2% |
| | 10,000–19,999 | 12.0% | 20.0% | 52.0% | 16.0% |
| | 20,000–29,999 | 30.0% | 10.0% | 30.0% | 30.0% |
| | 30,000–39,999 | 0.0% | 20.0% | 20.0% | 60.0% |
| | Above 40,000 | 0.0% | 0.0% | 25.0% | 75.0% |

problem gambling. It is found that gamblers with lower educational level are more likely to be problem gamblers than gamblers with a higher educational level ; 44.4% of the respondents who had an educational qualification of 12$^{th}$ or below are classified as problem gamblers in comparison to 19.4% who had completed graduation and 10.5% who completed master's degree. Gamblers who were self-employed (43.5%) and daily wage labourers (41.7%) are problem gamblers in comparison to employed (12.9%) and job seekers (14.3%). Another interesting finding of the study is that Sikkimese gamblers with higher income are more likely to be problem gamblers.

Chi-square statistics have been calculated to identify the association between various demographic variables and the level of problem gambling, which is highlighted in Table 7. Marital status is significantly associated with the levels of problem gambling at the 5% level of significance ($p$-value < 0.05) and it is evident that 45.5% of the married respondents belonged to the category of problem gamblers. Another demographic variable that is significantly associated with the levels of problem gambling among the gamblers of Sikkim is the educational qualification. Educational qualification is significantly associated with the levels of problem gambling at a 10%

### Table 7. Association Between Different Demographic Variables and Levels of Problem Gambling

| Sl. No. | Demographic Variables | Pearson Chi - Square | | |
| --- | --- | --- | --- | --- |
| | | Value | df | Asymptotic Significance |
| 1 | Age | 17.355 | 12 | 0.137 |
| 2 | Gender | 2.920 | 3 | 0.404 |
| 3 | Marital Status | 16.731 | 6 | 0.010** |
| 4 | Educational Qualification | 14.907 | 9 | 0.094* |
| 5 | Employment Status | 13.023 | 9 | 0.162 |
| 6 | Monthly Income | 16.398 | 12 | 0.174 |

level of significance ( $p$-value < 0.10). Other demographic variables, that is, age, gender, employment status, and monthly income are not significantly associated with the levels of problem gambling.

**(5) Association Between Forms of Gambling and Levels of Problem Gambling :** Forms of gambling also have a significant impact on gambling behaviour and levels of problem gambling. All the major forms of gambling such as casinos, lottery, online gaming are legal in the state of Sikkim. As such, an effort has been made to identify the association between the different forms of gambling and levels of problem gambling among the Sikkimese gamblers. However, in this study, casino gambling has been excluded since Sikkimese gamblers are refrained from entering a casino after the amendment of Rule 28 of the Sikkim Casinos (Control and Tax) Amendment Rules, 2016. Based on the responses of the respondents, the analysis of the results has been highlighted in the following paragraphs.

Table 8 highlights the association between different forms of gambling and the risk categories. In terms of the association between different forms of gambling and the levels of problem gambling, problem gamblers are more likely to indulge in online gambling (42.9%) followed by other forms of gambling (37.5%). Sikkim state lottery and Tambola are the most common forms of gambling indulged in by the Sikkimese gamblers, but the rate of problem gamblers engaged in playing Sikkim state lottery (26.2%) and Tambola (14.9%) is much lower than problem gamblers engaged in online gaming.

Table 9 highlights the association between gambling forms and levels of problem gambling. Similar to the analysis for the association between demographic variables and levels of problem gambling, the chi-square statistics have been calculated to identify the association between different forms of gambling and levels of problem gambling. Among the three main forms of gambling, only Tambola is significantly associated with the levels of problem gambling among the gamblers of Sikkim.

### Table 8. Descriptive Statistics of Gambling Forms and Gambling Behaviour by Risk Categories

| Sr. No. | Gambling Forms | Non- Problem Gamblers | Low Risk Gamblers | Moderate Risk Gamblers | Problem Gamblers |
| --- | --- | --- | --- | --- | --- |
| 1 | Sikkim State Lottery | 7.1% | 21.4% | 45.2% | 26.2% |
| 2 | Tambola (Bingo) | 12.8% | 17.0% | 55.3% | 14.9% |
| 3 | Online gaming | 0.0% | 14.3% | 42.9% | 42.9% |
| 4 | Others | 4.2% | 12.5% | 45.8% | 37.5% |

**Table 9. Association Between Gambling Forms and Levels of Problem Gambling**

| Sr. No. | Demographic Variables | Pearson Chi - Square | | |
|---------|----------------------|-------|------|-------------------------|
| | | Value | df | Asymptotic Significance |
| 1 | Sikkim State Lottery | 2.276 | 3 | 0.517 |
| 2 | Tambola (Bingo) | 7.978 | 3 | 0.046* |
| 3 | Online Gambling | 3.597 | 3 | 0.308 |
| 4 | Others | 3.136 | 3 | 0.371 |

**(6) Trade-off Between Levels of Problem Gambling and State Revenue :** The Government of Sikkim has been generating a huge amount of revenue from its gambling industry. During the period between 2011–12 and 2017–18, the Government of Sikkim generated revenue of about ₹ 2,274 million from its state lottery and ₹ 350.46 million from its casino industry. Although the amount of revenue generated from both the state lottery and casinos is increasing, the existence of prevalence of problem gambling among the gamblers of Sikkim also needs special attention. The rate of problem gambling among the gamblers who had taken part in at least one form of gambling is about 26.3%, which is higher than 25.2% as identified by Jaisoorya et al. (2017) in their study and lower than 38.1% as identified by George et al. (2016) in their study.

In terms of the association between various demographic variables and levels of problem gambling, only marital status and educational qualification are found to have a significant association with the levels of problem gambling at 5% and 10% levels of significance; whereas, only Bingo (Tambola) has a significant association with the levels of problem gambling at the 5% level of significance.

## Conclusion and Policy Implications

Problem gambling represents a major public health issue with several adverse consequences for the gamblers as well as their families and the society as a whole. Legalization and expansion of gambling and gambling products will make it simpler for the gamblers to have easy access to gambling. Wherever necessary, the government should intervene and pass resolutions to reduce the level of problem gambling among the gamblers.

This study presents a precise picture of the level of problem gambling among the gamblers of Sikkim. The rate of prevalence of problem gambling among the gamblers in Sikkim is found to be on a higher side, which is a matter of great concern. The Government of Sikkim has banned its citizens from gambling in casinos to ensure and safeguard the people from developing excessive gambling behaviour. The government's decision of banning the people of Sikkim inside casinos is a welcome move in curtailing the increase in the development of problem gambling severity in Sikkim. The Government of Sikkim should also come up with resolute measures to control the severity of problem gambling among the gamblers of Sikkim, who still have access to gambling in other forms.

Studies on the prevalence of problem gambling in India are rare. There is a need for further research in this field to understand the gambling behaviour among the Indian gamblers. With several proponents and opponents of gambling arguing for the legalization of sports betting and gambling in India, such studies will help identify the basis on which regulations related to legalizing or banning gambling in States can be discussed upon.

## Limitations of the Study and Scope for Further Research

The present study is limited to the gamblers of Sikkim and does not include any gamblers who visit Sikkim to take part in casino gaming. Sikkim holds a distinctive position of being the only state in India other than Goa that

provides casino gaming. Identifying the levels of gambling severity and the impact upon individual gamblers, family members, and society is relatively unexplored in India. Further studies in this field of research can adopt a longitudinal approach in identifying the aforementioned issues.

## Authors' Contribution

The idea for the paper was conceived by both authors. Adarsh Rai undertook the task of extracting the research papers relevant to the study. The objectives of the study were framed by Dr. Krishna Murari, and the questionnaire for the study was designed by Adarsh Rai in consultation with Dr. Krishna Murari. The survey was conducted by Adarsh Rai. After the completion of the survey, data were analyzed by Adarsh Rai under the supervision of Dr. Krishna Murari. Data were analyzed using IBM SPSS 20.0. Adarsh Rai wrote the manuscript in continuous consultation with Dr. Krishna Murari.

## Conflict of Interest

The authors certify that they have no affiliations with or involvement in any organization or entity with any financial interest, or non-financial interest in the subject matter, or materials discussed in this manuscript.

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