The prevalence of problematic gambling behavior: A Scandinavian comparison

Article *in* Scandinavian Journal of Public Health · July 2009

DOI: 10.1177/1403494809106545 · Source: PubMed

2 authors, including:

Jens Bonke
The Rockwool Foundation
60 PUBLICATIONS **737** CITATIONS

SEE PROFILE

SOCIAL FORSKNINGS INSTITUTTET

Jens Bonke
Karen Borregaard

09:2006 WORKING PAPER

THE PREVALENCE OF PROBLEMATIC GAMBLING BEHAVIOUR – A SCANDINAVIAN COMPARISON

RESEARCH DEPARTMENT OF SOCIAL POLICY AND WELFARE SERVICES

The Prevalence of Problematic Gambling Behaviour – a Scandinavian Comparison

Jens Bonke & Karen Borregaard

Social Policy and Welfare Services
Working Paper 09:2006

The Prevalence of Problematic Gambling Behaviour
- a Scandinavian Comparison

JENS BONKE AND KAREN BORREGAARD

The National Institute of Social Research, Denmark

For the first time a large scale screening for gambling problems within the adult Danish population has been performed. By applying different tools, i.e. SOGS-R and NODS, it has become possible to compare with the prevalence of problematic gambling behaviour in Norway and Sweden. The result is that the prevalence of at-risk gamblers, problematic gamblers and pathological gamblers is significantly lower in Denmark than in the other Scandinavian countries. This holds for both genders as well as for different age-groups when comparing Denmark and Norway. The variation might be due to national differences in preferences for gambling, access to plays, public policies concerning gambling, etc., which calls for further comparative research.

Key Words: Gambling Mania, Screening, International Comparison

Jens Bonke and Karen Borregaard, The National Institute of Social Researc, Herluf Trolles Gade 11, DK-1052 Copenhagen K, Tel: +45 33480886; fax: +45 33480833; e-mail: jeb@sfi.dk.

INTRODUCTION

In this article we compare the prevalence of problematic gambling in the Scandinavian countries. This comparison is possible due to a new Danish study (Bonke & Borregaard 2006).

A number of international validated screens have been developed for the specific purpose of demarcating persons with problematic gambling behaviour. Based on a pre-test study where both the SOGS-R screen and the NODS screen were applied, the NODS screen was chosen for the Danish prevalence survey.

Previous international studies have shown that the prevalence of persons with gambling problems, inclusive pathological gamblers, is relative small (Lund & Nordlund 2003). Therefore it was necessary to conduct more than 8,000 interviews to ensure an adequate statistical basis for the estimations of the prevalence of gambling problems.

This article includes the following sections. In section 2 the methodology of the Danish prevalence survey is discussed. Then in section 3 follows a description of the data in the study. Section 4 concerns the estimations of the prevalence of gambling problems and pathological gambling, and a comparison between the Scandinavian countries. Section 5 concludes.

METHODOLOGY

Internationally a number of screens have been developed to study the prevalence of gambling problems. In 1977 pathological gambling was included in the 9th edition of the

International Classification of Diseases, and was also included in the Diagnostic and Statistical Manual of the American Psychiatric Association (DSM-III) (Lesieur & Blumer, 1987). Since then DSM-III was further developed to DSM-III-R and in 1994 to DSM-IV.

DSM-IV is a number of diagnostic criteria used to diagnose gambling problems, se Bonke & Borregaard (2006). Based on DSM-IV a number of screens have been developed. South Oaks Gambling Screen, SOGS and a later version SOGS-R were developed based on DSM-IV. The SOGS-R screen includes questions referring to two time periods, lifetime and past year. In this way it distinguishes between gambling problems during ones lifetime and during the past year.

SOGS and SOGS-R were the most used screens in a number of years. These screens were used in the national Norwegian (Lund & Nordlund, 2003) and in the national Swedish prevalence study (Rönnberg et al., 2000), as well as in the national study in New Zealand (Abbott & Volberg, 1999)(an overview is to be found in Petry & Armentano, 1999).

The demand for more screen and a critique of SOGS implied the development of a new screen by the National Research Centre at the University of Chicago, NODS (NORC DSM Screen for Gambling Problems). The screen includes 17 items and the maximal score is 10. As SOGS-R the NODS screen includes two time dimensions: lifetime prevalence and past year prevalence. This screen is developed from the DSM-IV as well as SOGS and SOGS-R. Persons with the score 1-2 is characterized as at-risk gamblers, 3-4 as problem gamblers and a score of 5 or more (5+) as pathological gamblers.

According to Lund and Nordlund, the NODS screen was developed mainly to reduce the amount of false positive relatively to that of SOGS-R. A test done by Gerstein et al. (1999)

concludes that NODS has a good internal consistent as well as good retest reliability (the test is refered to in Lund & Nordlund, 2003). The test also shows that NODS-lifetime has a good validity because it places the people with different degrees of gambling problem in the right category. NODS-past year does not have as good validity as NODS-lifetime.

Even though NODS has fewer questions than SOGS-R, NODS is considered more restrictive than SOGS-R, because several studies has shown that the prevalence of NODS is lower than the one of SOGS-R. (Volberg, 2002). The pre-test of this study included both SOGS-R and NODS and sustains these experiences. The prevalence of NODS-lifetime and –past year in the pre-test study is lower than the prevalence of SOGS-R

In the main part of this study only the NODS screen (both lifetime and past year) was included. However, not all respondents were asked the questions from the NODS screen. Persons who never had lost more than 35 DDK in a single day of gambling were not asked the NODS questions, and were thus defined as not having a problem with their gambling behaviour. This filter was based on results from the pre-test study where all respondents were asked both the questions from NODS and SOGS-R. Analysis of the pre-test study showed that persons who had never lost more than 35 DDK in a single day of gambling were according to the two screens not having a gambling problem. In an American study a corresponding, though much more discriminating, filter was used: "…only respondents who acknowledged ever losing $100 or more in a single day of gambling…." were asked the questions of the NODS screen. (Gerstein et al., 1999: 19)

To prevent asking a lot of irrelevant questions to the respondents the NODS screen (as well as the SOGS-R screen in the pre-test study), were constructed as follows. First the

respondents were asked a NODS question concerning lifetime gambling behaviour, only those that responded positive to the lifetime question were asked the corresponding past year question. This means that the lifetime prevalence will be equal to or higher than the past year prevalence.

Finally we want to mention that prevalence studies that uses similar methodology in the area of alcohol- and drug abuse mostly results in a prevalence that is considerable lower than the actual problem, see ex Lund & Nordlund (2003). This could indicate that the prevalence of this study is lower rather than higher than the actual prevalence of gambling problems.

THE DATA

This study is based on a randomly chosen sample among the adult Danish population. That is, 11,737 individuals in the age-group 18-74 (both inclusive) constitute a representative sample concerning gender, age, geography and marital status drawn from the Danish CPR-register (administrative information). The number of interview conducted were 8.153.

The interviews were mainly conducted via telephone and not-obtained interviews were followed up with visit interview. In advance a letter was send to the interviewees. The letter informed about the survey and the study in general and told the time for the phone call. The reason for conducting telephone interviews is partly due to the great number of interviews, and is also caused by an examination of the questions concluding that the questions are not particular sensitive. In Lund & Nordlund (2003) the interviewees choose between telephone interviews and a receiving the questionnaire by post, and the not-obtained telephone interview did also receive the questionnaire by post. The response rate of the telephone

interviews were around 50 pct. larger than the response rate of the postal interviews (65.5 and 40.7 pct.). Therefore we conclude that telephone interviews concerning gambling problems is a reasonable method, in particular when the not-obtained telephone interviews were followed by a visit interview.

As the first part of the study, the pre-test study, 1,366 interviews were conducted to compare different screens for gambling problems as well testing the relevance of other question. This pre-test study was done based on a sample taken from the complete sample of 11,737 persons. All interviews were done by telephone. Because the pre-test study included the NODS screen the prevalence, based on NODS, can be estimated for all interviews, including pre-test interviews and interview from the main study.

Besides the 1,366 interviews conducted in the pre-test study 6,787 interviews were conducted in the main study, which in all gives a response rate on 70 pct. This response rate is considerable larger than in Norway where Lund & Nordlund (2004) had a response rate on 55 pct. On the other hand the response rate is at the same level as the Swedish on 72 pct. (Rönnberg et al.: 2000). In comparison with other countries response rates (see Lund & Nordlund 2003 table 1,1) the Danish response rate is relative high.

From other studies (eg. Lund & Nordlund: 2003) it is well known that some bias could be expected. For example too few young people participate in comparison with their proportion of the population. This could be an argument for an over-sampling of the youngest part of the group. In the present Danish study no group is over-sampled because there was no convincing knowledge of the possible bias in advance, and because a weighting procedure afterwards was expected to become possible due to the great number of cases. In this article

the estimates of the prevalence of pathological gambling are, in table 5, shown as a non-weighted as well as a weighted prevalence.

THE PREVALENCE OF GAMBLING PROBLEMS

At-risk, Problem and Pathological gamblers.

To find the prevalence of gambling problems the NODS screen is used in this study. NODS includes 17 questions and the maximum score is 10 points. The group of respondents that gives positive answers to 1 or 2 NODS items is classified as at-risk gamblers, 3-4 positive answers as problem gamblers and 5 or more (5+) positive answers is classified as pathological gamblers (Gerstein, D et al. 1999: 21). The NODS screen includes both questions referring to lifetime and a past year gambling behaviour. In this way NODS distinguish between gamlers that at one point during their lifetime have had a gambling problem – NODS lifetime - and gamblers that still have or have had a gambling problem during the last year – NODS last year.

The study shows that 3.9 pct. of the adult Danish population at one point has had or have a gambling problem, while 2.3 have or have had a problem during the last year (table 1.). This implies that around one third of the Danes that at one point had a gambling problem, do not have this problem any more. These results do not mean, however, that there are fewer Danes with a gambling problem today than earlier, but demonstrate that one do not necessarily have a gambling problem forever as well as it is possible to have longer periods of time where gambling is not a problem.

Table 1. *Lifetime and past year prevalence of gambling problems (n=8153).*

	1 point	2 point	3 point	4 point	5+ point	All (1+ point)
	Percent	Percent	Percent	Percent	Percent	Percent
NODS lifetime	2,4	0,8	0,2	0,2	0,3	3,9
NODS past year	1,5	0,4	0,2	0,1	0,1	2,3

Gambling problems is more prevalent based on the NODS lifetime screen than on the NODS past year screen (Table 1.). It means that no matter the degree of gambling problem there are people that stops having a problem or have periods of time with other degrees of gambling problem or periods of time without a gambling problem.

In the pre-test study the SOGS-R and NODS screens were both included to make a comparison between the prevalence of the two screens. In this study it is clear that the NODS discriminates more than the SOGS-R both regarding the lifetime- and the past year prevalence. This is in accordance to Lund & Nordlund (2003), and to the fact that the NODS screen was introduced to reduce the amount of false positive pathological gamblers in comparison to the SOGS-R prevalence.

The majority of the adult Danish population, 83.8 pct. is according to NODS-lifetime as well as SOGS-R-lifetime neither at-risk-, problem- or pathological gamblers. More than every tenth adult Dane, 10.5 pct., are at-risk gamblers (1-2 point) according to the SOGS-R lifetime screen, but have no gambling problem (0 point) based on the NODS lifetime screen. Only 1.2 pct. is at-risk gamblers according to the NODS lifetime screen, but has no gambling problem based on the SOGS-R (table 2). Correspondingly, the SOGS-R past year screen

gives a higher prevalence than NODS past year (table 3), though the difference is not as marked as for the lifetime prevalence.

Table 2. *Comparison of the respondent's score on the NODS and SOGS-R lifetime screen (N=1232*).*

					NODS lifetime score	
SOGS-R lifetime score	0 point	1 point	2 point	3 point	4 point	5+ point
	Percent	Percent	Percent	Percent	Percent	Percent
0 point	83,8	1,2	0,0	0,0	0,0	0,0
1 point	9,4	1,2	0,2	0,2	0,0	0,0
2 point	1,1	0,8	0,2	0,2	0,0	0,0
3 point	0,2	0,1	0,1	0,1	0,1	0,0
4 point	0,2	0,0	0,2	0,0	0,2	0,0
5+ point	0,0	0,0	0,0	0,0	0,1	0,4

* The SOGS-R screen was only a part of the pre-test study. In all there are 1,366 respondents of whom 134 have never gambled and therefore not asked the SOGS-R questions.

Table 3. *Comparison of respondent's score on the NODS and SOGS-R past year screen (N=1232*).*

					NODS past year score	
SOGS-R past year score	0 point	1 point	2 point	3 point	4 point	5+ point
	Percent	Percent	Percent	Percent	Percent	Percent
0 point	92,2	1,0	0,0	0,0	0,0	0,0
1 point	4,1	0,5	0,1	0,2	0,0	0,0
2 point	0,4	0,3	0,1	0,2	0,0	0,0
3 point	0,2	0,1	0,1	0,0	0,1	0,0
4 point	0,2	0,0	0,0	0,0	0,1	0,0
5+ point	0,0	0,0	0,0	0,0	0,0	0,2

* The SOGS-R screen was only a part of the pre-test study. In all there are 1,366 respondents of whom 134 have never gambled and therefore not asked the SOGS-R questions.

The application of NODS means that the estimated amount of at-risk-, problem- and pathological gamblers is lower than if the SOGS-R screen is used, especially for the

estimation of adult Danes that at some point in their lives have had a problem with their gambling behaviour (table 4).

Table 4. *Comparison of the NODS and SOGS-R life time screening scores, and comparison of the NODS and SOGS-R past year screening scores (only the pre-test study).*

Lifetime	Percent (N=1232)	Past year	Percent (N=1232)
NODS score > SOGS-R score	1,9	NODS score > SOGS-R score	1,5
NODS score = SOGS-R score	85,9	NODS score = SOGS-R score	93,1
NODS score < SOGS-R score	12,2	NODS score < SOGS-R score	5,4

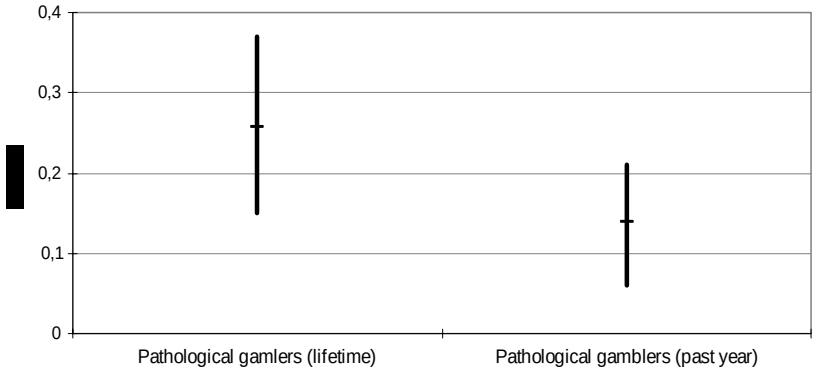
Problematic gambling behaviour

Previous international studies have shown that the prevalence of persons with gambling problems is relative small (Lund & Nordlund 2003). This is confirmed in the present study both concerning at-risk gamblers, problem gamblers and pathological gamblers.

Table 5. *The prevalence of pathological gamblers in the adult Danish population according to NODS lifetime and past year screening.*

	Lifetime prevalence		Past year prevalence	
	Prevalence	95% confidence interval	Prevalence	95% confidence interval
		Pathological gamblers (NODS 5+)		
Percent	0,258	0,15 – 0,37	0,139	0,06 – 0,21
Numbers	9.856	5.740-14.158	5.163	2.296-8.036
		Problematic gamblers (NODS 3-4)		
Procent	0,42	0,28-0,56	0,23	0,13 - 0,34
Antal	15.957	10.605 – 21.310	8.917	4.912 – 12.922
		At-risk gamblers (NODS 1-2)		
Procent	3,14	2,76 - 3,52	1,85	1,56 - 2,14
Antal	120.149	105.664 – 134.635	70.869	59.671 – 82.068

Figure 1. *Prevalence: 95 pct. confidence interval.*



Between 5,700 and 14,200 adult Danes have at one point during their life been pathological gamblers (NODS 5+). The number of Danes that during the past year have been or still are pathological gamblers is between 2,300 and 8,000, these also are included in the lifetime amount. 0.26 pct. of the adult population has been pathological gamblers during their lifetime and 0.13 pct. are still or have been pathological gamblers during the past year (table 5).

Bonke & Borregaard (2006) show that the prevalence is almost unchanged when it is weighed for biases in the samples. When the prevalence is weighted for gender, age geography or marital status it changes at most 0.007 pct. and stays well within the confidence interval.

The number of problematic gamblers (NODS 3-4) in life-time is between 10.600 and 21.300 adult Danes, while the number of problematic gamblers during the past year is between 4.900 and 12.900 individuals (table 5), i.e. the last numbers are included in the first

numbers. Correspondingly, the number of at-risk gamblers (NODS 1-2) in life-time is between 105.700 and 134.600 of whom between 59.700 and 82.100 individuals have been or still are at-risk within the last year.

PROBLEMATIC GAMBLING IN SCANDINAVIA

The prevalence of at-risk-, problem- and pathological gamblers are larger in both Sweden and Norway in comparison with Denmark. This is the case even though the same screens are used. The national differences are larger for the lifetime prevalence than for the past year prevalence. All together the percentages that score at least one point on the NODS past year screen is 2.9 pct. in Norway, 2.3 pct. in Denmark, and on SOGS-R 9.1 pct. in Sweden and 6.1 pct. in Denmark.

Table 6. *The Danish and Norwegian NODS lifetime and past year prevalence. In percent.*

		1-2 point	3-4 point	5+ point	I alt (1+ point)
		Percent	Percent	Percent	Percent
NODS lifetime	Denmark	3,2	0,4	0,3	3,9
	Norway[1]	4,5	0,7	0,6	5,8
NODS past year	Denmark	1,9	0,3	0,1	2,3
	Norway[1]	2,3	0,3	0,3	2,9

[1] Special analysis by Ingeborg Lund, SIRUS.

Table 7. *The Danish and Swedish SOGS-R lifetime and past year prevalence.*

		1-2 point	3-4 point	5+ point	I alt (1+ point)
		Percent	Percent	Percent	Percent
SOGS-R lifetime	Denmark	13,3	1,2	0,5	15,0
	Sweden[1]	15,3	2,5	1,1	18,9
SOGS-R pasat year	Denmark	5,9	0,8	0,2	6,9
	Sweden[1]	7,3	1,3	0,4	9,1

[1] Special analysis by Jakob Jonsson, former IGRT, Stockholm.

Looking only at pathological gamblers these are in relative as well as in absolute numbers less widespread in Denmark than in Norway and Sweden. The lifetime prevalence, persons who at least at one point during their lifetime have been pathological gamblers, according to NODS is in Norway 0.6 pct. and in Denmark 0.3 pct. In Sweden the lifetime SOGS-R prevalence is 1.1 pct. and in Denmark this prevalence is 0.5 pct. (tables 6-7). The Danish past year prevalence is 0.2 pct. and thereby lower than the Norwegian NODS prevalence as well as the Swedish SOGS-R prevalence.

Table 8. *The NODS score 3+ in Denmark and Norway for gender and age.*

	NODS lifetime		NODS past year	
	Problem- and pathological gamblers			
	NODS score = 3+			
	Denmark	Norway[1]	Denmark	Norway[1]
	(N=8153)	(N=4978)	(N=8153)	(N=4977)
	Percent			
Gender				
Male	0,61	2,1	0,33	1,1
Female	0,06	0,5	0,04	0,2
Age				
18-24	0,16	3,9	0,11	2,3
25-44	0,40	1,3	0,22	0,6
45-64	0,10	0,6	0,04	0,2
65-74	0,01	0,4	0,00	0,4

[1] Special analysis by Ingeborg Lund, SIRUS.

If we compare the prevalence of problem- and pathological gamblers (NODS 3+) it is clear that more men than women belong to this group in Norway as well as in Denmark. However, the gender difference is more marked in Denmark than in Norway. For all age groups there are more Norwegians than Danes which are problem- and pathological

gamblers. In Norway the largest group of problem- and pathological gamblers are the 18-24 years olds, while in Denmark the largest group is constituted by 25-44 years old people.

The differences between the prevalences of the Scandinavian countries can be explained in several ways. One possible explanation is that the Danes, Swedes and Norwegians responds in different ways to some of the questions in the screens. If the Danes e.g. perceive some questions as more "sensitive" or "stigmatising" than the respondents from the two other countries, it will result in a lower prevalence in Denmark than in the two other countries. It does not seem likely that this is the explanation for the differences between the Scandinavian countries, because the distribution of the positive answers to the NODS screen is relatively alike in Norway and Denmark (see Bonke & Borregaard, 2006). The differences in the prevalence of gambling problems in the Scandinavian countries must be caused by other circumstances such as variation in preferences for gambling, different gambling behaviours, variation in accessibility to different plays, the administration of gambling etc. This is, however, beyond the purpose of this study to address.

SUMMARY

This article refers to the first survey on the prevalence of gambling and problems with gambling in Denmark. Around 8,000 Danes randomly chosen among 18-74 aged people were interviewed. To find the prevalence of gambling problems the international validated NODS screen was used.

Among the adult Danish population 3.9 pct. have been or still is pathological gamblers during their lifetime. 2.3 pct. have had this gambling problem during the past year. There are

0.26 pct. of the adult population that have been pathological gamblers during their lives and 0.13 pct. during the past year.

In comparison to Norway and Sweden the prevalence of at-risk-, problem- and pathological gamblers are larger in both Sweden and Norway. The national differences are larger for the lifetime prevalence than for the past year prevalence. That is, the percentages that score at least one point on the NODS past year screen is 2.9 pct. in Norway, 2.3 pct. in Denmark, and on SOGS-R 9.1 pct. in Sweden and 6.1 pct. in Denmark. Also when looking only at pathological gamblers these are less widespread in Denmark than in Norway and Sweden.

More men than women are problem- and pathological gamblers (NODS 3+) in Norway as well as in Denmark, but the gender difference is more marked in Denmark. For all age groups there are more Norwegians than Danes which are problem- and pathological gamblers. However, in Norway the largest group of problem- and pathological gamblers are the 18-24 years olds, while in Denmark the largest group is constituted by 25-44 years old people.

There might be several reasons for the variation in prevalence between the Scandinavian countries. That is, variation in preferences for gambling, different gambling behaviours, variation in accessibility to different plays, the administration of gambling etc. This important issue, however, was beyond the purpose of this study, and might await future research.

REFERENCES

Abbot, M.W. & Volberg, R.A. (1996). The New Zealand national survey of problem and pathological gambling. *Journal of Gambling Studies*, 12, pp. 143-160.

Bonke, J. (2005). *Undersøgelse af ludomani i Danmark – udbredelse og årsager. Projektbeskrivelse.* Socialforskningsinstituttet. København.

Bonke, J. & Borregaard, K. (2006). *Ludomani i Danmark. Udbredelsen af pengespil og spilleproblemer.* SFI-rapport 06:12.

Gerstein, D., Hoffmann, J., Larison, C., Engelman, L., Murphy, S., Palmer, A., Chushro, L., Toce, M., Johnson, R., Buie, T. & Hill, M.A. (1999). *Gambling Impact and Behavior Study.* National Opinion Research Center at the University of Chicago. US.

Götestam, K.G. & Johansson, A. (2003). Characteristics of gambling and problematic gambling in Norwegian context. A DSM-IV-based telephone interview study. *Addictive Behaviors*, 28, pp. 189-197.

Johansson, A. & Götestam, K.G. (2004). *Risk Factors for Problematic Gambling: A Critical Literature Review.* Research Report, no. 95, vol 25, 2004. The Norwegian University of Science and Technology. Trondheim. Norway.

Johnsson, J., Andrén, A., Nielsson, T., Svensson, O., Munck, I., Kindstedt, A. og Rönnberg, S. (2003). *Spelberoende i Sverige – vad kännetecknar personer med spilproblem?* Statens Folkhälsoinstitutet. Rapport nr 2003:22. Stockholm.

Lund, I. & Nordlund, S. (2003). *Pengespill og pengespillproblemer i Norge.* Rapport nr. 2/2003. Statens Institutt for rusmiddelforskning. Oslo.

Nielsen, P. & Røjskjær, S. (2005). *Ludomani. Karakterisika. Psykopatologi og behandlingsforløb – en undersøgelse af ludomane i behandling*. Ringgården. Middelfart.

Petry, N.M. & Armentano, C (1999). Prevalence, assessment, and treament of pathological gambling: a review. *Psychiatric Services*, 50, pp. 1021-1027.

Rönnberg, S, Volberg, R., Abbott, M., Moore, R., Andrén, A., Munck, I., Jonsson, J., Nilsson, T. & Svensson, O. (2000). *Spel och Spelberoende i Sverige – rapport nr 3* I Folkhälsoinstitutets serie om spel och speleroende, November 1999. Folkhälsoinstitutet 2000:21. Stockholm.

Volberg, R.A. & Abbot, M.W. (1996). Lifetime prevalence estimates of pathological gambling in New Zealand. *International Journal of Epidemiology*, 23, pp. 976-983.

Voldberg, R.A. & Dickerson, M.G. (1996). Special Issue on Prevalence Studies of Problem and Pathological Gambling. *Journal of Gamgling Studies*. Vol. 12, No. 2.

Skatteministeriet (2001). *Spil i fremtiden – overvejelser om en samlet spillelovgivning*. København.

Stinchfield, R. & Govoni, R. (2001). *A Critical Review of Screening and Assesment Instruments for Problem Gambling*. Problem Gambling Research Group, University of Windsor.