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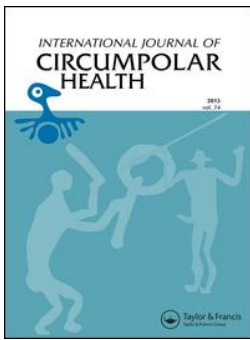
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# Prevalence of problems with alcohol, marijuana and gambling among patients in a Regional Hospital in Northern Greenland: investigating the potential for brief interventions in a hospital setting

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## ABSTRACT

Problems with alcohol, marijuana and gambling are major public health challenges in Greenland but their prevalence in a hospital setting has not been explored. Healthcare facilities play a significant role in Greenland. One important aspect is their provision of both primary and secondary healthcare services to a small and scattered population while their potential as settings for screening for problems with alcohol, substances and gambling is an unexplored area with large public health potential. This study explored the prevalences of problems with alcohol, marijuana and gambling in a hospital and the potential for the use of a hospital as a setting for screening for alcohol, substance and gambling problems. Patients from the Northern Ilulissat Hospital filled in a self-administered questionnaire regarding their behaviour related to alcohol, marijuana and gambling. Data were weighted and compared to the nationally representative 2018 Health Survey. In the Ilulissat Survey, a large proportion were abstainers but there were still problems related to alcohol, marijuana and gambling indicating a potential for screening in a hospital setting. The results based on data from 2,554 respondents showed that prevalences of problems with alcohol, marijuana and gambling are lower in the Ilulissat Survey compared to the 2018 Health Survey.

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Hospital setting; screening; brief intervention; arctic; alcohol; marijuana; gambling

## Introduction

Problems with alcohol, marijuana, and gambling constitute major public health issues in Greenland. These problems often coexist and are especially prevalent among men [1,2]. Investigation of hospitals as potential arena for screening and intervention targeted problems with alcohol, marijuana and gambling is highly relevant in a Greenlandic context.

A large register-based study has shown that first-time alcohol-related hospitalisations in men and women are associated with higher rates of further alcohol-related hospital admissions and mortality. These findings emphasise the potential public health benefits of screening for and treatment of alcohol-related problems in a hospital setting [3]. Since more than 200 diseases are related to high alcohol consumption the hospital is an interesting setting for screening and intervention [4]. In addition, there is good evidence of the adverse effects of disorders related to alcohol and drug use as well as the benefit of treatment [5].

Healthcare in Greenland is challenged by the vast distances, dispersed population and challenging infrastructure with no connecting roads between the 80 communities. The population counts around 56,000 people of whom 90% are indigenous to the land (Greenland Inuit). In Greenland primary and secondary healthcare facilities are integrated in small coastal hospitals and one national referral hospital in the capital Nuuk. Greenland is divided into five health regions with five regional hospitals. All healthcare in Greenland is free of charge and is mainly based on a Danish healthcare model [6]. The hospital in Ilulissat is the most Northern regional hospital in Greenland serving approximately 5,000 people in the town of Ilulissat and its four settlements and furthermore three towns and 24 small communities in the Avannaarq region. On average the Ilulissat Hospital receives 200–250 patients daily for hospitalisation and outpatient visits with physicians, midwives, psychiatric nurses, physical therapists, nurses specialised in diabetes and other lifestyle diseases, nurses specialised in child healthcare, homecare nurses, and other types of healthcare professionals. Because of the integration of

primary and secondary healthcare services, the majority of citizens pass through the healthcare system in a year. This puts the hospitals in a unique position to engage in not only treatment but also preventive screening and interventions for problems with alcohol, marijuana and gambling.

Today, there is no systematic focus on screening and treatment of problems related to alcohol, marijuana and gambling among patients in hospitals. Free access to treatment does exist outside the hospitals at the national treatment facility Allorfik [7].

The aim of the study was to investigate the prevalence of problems related to alcohol, marijuana and gambling in a hospital setting based on a small survey in the outpatient clinic as well as among admitted patients at the Ilulissat Hospital. In order to compare the size of the problems, prevalences were compared to a representative sample of the general population. We hypothesised that the prevalence of problems with alcohol, marijuana, and gambling among patients at the Ilulissat Hospital would be similar to the prevalence found in the 2018 Health Survey [2]. This study is, to our knowledge, the first study to explore the prevalence of problems related to alcohol, marijuana and gambling in a hospital setting in Greenland.

If problems with the use of alcohol, marijuana and gambling are present among patients, the healthcare system can serve as a relevant platform for brief interventions consisting of screening followed by low-cost short counselling session in a non-judgemental and non-confrontational way based on the principles of Motivational Interviewing. This type of intervention has been found beneficial in more than 50 mainly efficacy studies, whereas results from efficiency studies have been mixed with low on average reduction in alcohol intake [5]. The target population for these treatment modalities are patients with a harmful alcohol use whereas patients with more severe alcohol-related problems require specialised treatment as, for example, family therapy, cognitive behavioural therapy and/or pharmacological treatment.

## Methods

### *The Ilulissat Survey*

In the Ilulissat Survey, all patients aged 18 or more who were in contact with the Ilulissat Hospital in May 2016 were eligible for inclusion. Patients were excluded if they did not speak Danish or Greenlandic, did not live in the municipality, or were not considered able to participate due to mental or physical stage. Two hundred patients were recruited for the survey. Five participants were

excluded from the sample due to missing information on sex and age.

The questionnaire for the Ilulissat Survey was available in both Greenlandic and Danish. The translation of the questionnaire was double translated into Greenlandic by professional translators and then translated back into Danish to validate the translations. The questionnaire included questions on sex, age, employment status, the use of alcohol, marijuana, and gambling. The medical staff was asked to distribute the questionnaire among the patients and, if necessary, to assist filling it out. All patients gave informed consent to participation in the survey and were informed that participation was voluntary and anonymous.

### *The Greenland Health Survey 2018*

When possible, the findings of the Ilulissat Survey were compared to the 2018 Health Survey. The 2018 Health Survey is part of an ongoing health survey in Greenland and is the fifth survey that has been conducted since 1993 (1993–94, 1999–2001, 2005–2010, 2014). The survey collects information on health and risk factors, demographics, region of residence, and social factors. The data constitute both questionnaire and clinical data. Important topics of the survey include adverse childhood experiences, smoking, alcohol, physical activity, diet, obesity, diabetes, physical and mental health. The Health Survey is conducted by the National Institute of Public Health in Denmark for the Ministry of Health in Greenland [2].

The 2018 Health Survey is representative of the Greenlandic population and included 2,539 participants, aged 15 to 94 years. Patients were recruited by both random sampling and by invitation of former participants from the four previous Health Survey cohorts. Of the included participants, 2,186 answered a self-administered questionnaire (86.1%). People who characterised themselves as Danish ( $n = 103$ ) were excluded from the sample to ensure that the two samples were as homogenous as possible. In order to compare the two surveys, the sample was restricted to people aged 18 and above ( $n = 76$ ) resulting in a final sample of 2,360 participants. Data collection for the 2018 Health Survey was based on interview, self-administered questionnaires and a clinical examination. Questions on use of alcohol, marijuana and gambling were part of the self-administered questionnaire available in both Danish and Greenlandic.

### *Outcome and comparison*

Both surveys measured alcohol consumption by abstinence, binge drinking (defined as having 5 or more

drinks on the same occasion), and the Alcohol Use Disorders Identification Test (AUDIT) questionnaire. The AUDIT questionnaire is a widely used instrument developed by the World Health Organisation for detection of alcohol use [8]. Based on a 10-item questionnaire covering alcohol consumption, drinking behaviour and problems related to alcohol AUDIT provides a simple tool for screening for potentially harmful or hazardous alcohol use [9]. Both surveys used the same questions on the frequency of use of marijuana allowing for comparison (ever used, last year, monthly, weekly or daily). On gambling-related behaviour both surveys used NODS-CLiP. NODS-CLiP is a screening tool for problem gambling based on the control, lying and preoccupation items of the NORC DSM-IV Screen for Gambling Problems (NODS) tool [10]. Due to the difference in sex and age distributions the Ilulissat survey was weighted according to the distribution in the 2018 Health Survey to eliminate ascribing any differences in prevalences to differences in demographic compositions. To investigate the combination of problems related to alcohol, marijuana and gambling a combined measure was constructed. A combined problem is defined as having gambling-related problems and/or a potentially harmful use of alcohol (AUDIT categories: hazardous, harmful or addicted) and/or use of marijuana on a weekly or daily basis.

### Statistical analyses

Results were based on descriptive analyses. The Ilulissat sample was weighted to match the 2018 Health Survey according to the distribution of sex and age. All analyses were conducted using IBM SPSS version 24 [11].

### Results

Table 1 presents the characteristics of the study population from the two surveys. The distribution of the participant characteristics is shown in restricted categories due to a low number of participants in the Ilulissat Survey. In the Ilulissat Survey, most participants were women (74.7%) and the average age in the sample was relatively low with most participants in the age group 18 to 34 years (45.4%). The majority of the participants were employed (79.5%). The sex distribution was more equal in the 2018 Health Survey with 55.7% women. The population was older than in the Ilulissat Survey with most participants in the two oldest age groups. In the 2018 Health Survey, 82.0% of the participants were employed.

Almost a third (27.8%) of the participants in the Ilulissat Survey were abstinent and more women were abstinent

**Table 1.** Overview of study populations in the Ilulissat Survey and the 2018 Health Survey.

	Ilulissat Survey		2018 Health Survey	
	n	%	n	%
<b>Sex</b>				
Male	49	25.3	1046	44.3
Female	145	74.7	1314	55.7
<b>Age</b>				
18–34	88	45.4	554	23.5
35–54	74	38.1	898	38.1
55–65+	32	16.5	908	38.5
<b>Occupation</b>				
Employed	147	79.5	1568	82.0
Unemployed	39	20.5	344	18.0
Missing	9		448	
<b>Total</b>	194		2360	

(Table 2). Monthly, weekly or daily binge drinking behaviour was seen among 20.8% and among men the prevalence was 30.1% compared to 13.2% among women. The proportion with a potentially harmful alcohol use (AUDIT categories: hazardous, harmful or addicted) was 28.3% overall and the proportion was higher among men. The same pattern was seen regarding the use of marijuana within the last year and problem gambling where prevalences were higher among men. Overall 12.7% had used marijuana within the last year while 18.3% had gambling-related problems. In the 2018 Health Survey, the same pattern was observed with a higher proportion of men who had been binge drinking, had a potentially harmful alcohol use, used marijuana or had gambling-related problems. However, the differences between men and women were smaller in this sample. When comparing the prevalences found in the Ilulissat Survey to the 2018 Health Survey, the 2018 Health Survey had higher proportions with binge drinking behaviour, a potentially harmful alcohol use, use of marijuana or gambling-related problems. In accordance with these findings, more people were abstinent in the Ilulissat Survey than in the 2018 Health Survey.

Table 3 provides information on the proportion with one type of problem and the proportion with combined problems. The majority of the participants in the Ilulissat Survey did not have any problems related to alcohol, marijuana and/or gambling, while having one type of problem was more prevalent (25.9%) than having a combination of problems (6.8%). In the 2018 Health Survey, the proportions with either one or more problems related to alcohol, marijuana and/or gambling were greater than in the Ilulissat Survey.

### Discussion

This study aimed to investigate the prevalence of problems related to alcohol, marijuana and gambling in a hospital setting and compare the prevalences with

**Table 2.** Use of and possible problems with alcohol, marijuana and gambling. Prevalences from the Ilulissat Survey are weighted according to the sex and age distribution in the 2018 Health Survey.

	Ilulissat Survey						2018 Health Survey					
	Men		Women		Total		Men		Women		Total	
	n	%	n	%	n	%	n	%	n	%	n	%
<b>Alcohol</b>												
Non-abstainer	57	75.2	60	69.6	117	72.2	672	84.2	724	81.3	1396	82.7
Abstainer	19	24.8	26	30.4	45	27.8	126	15.8	166	18.7	292	17.3
Missing	10		21		32		248		424		672	
<b>Binge drinking</b>												
Never/rarely	50	69.9	76	86.8	126	79.2	448	62.0	504	63.9	952	63.0
Monthly/weekly/daily	22	30.1	12	13.2	33	20.8	274	38.0	285	36.1	559	37.0
Missing	14		20		35		324		525		849	
<b>AUDIT (The AUDIT score)</b>												
Non-harmful alcohol use (0–7 M, 0–6 F)	44	64.7	65	77.5	109	71.7	370	50.9	468	58.0	838	54.6
Hazardous/harmful/addicted (8–15 M, 7–15 F)/(16–19)/(20+)	24	35.3	19	22.5	43	28.3	357	49.1	339	42.0	696	45.4
Missing	18		24		42		319		507		826	
<b>Marijuana</b>												
Never used/Not the last year	60	82.1	80	91.6	139	87.3	593	73.8	728	80.3	1321	77.2
Used within the last year (less than once a month, once a month, weekly or daily)	13	17.9	7	8.4	15	12.7	211	26.2	179	19.7	390	22.8
Missing	13		21		34		242		407		649	
<b>Gambling</b>												
No gambling-related problems	28	73.0	40	89.2	68	81.7	502	68.6	671	76.5	1173	72.9
Gambling-related problems	10	27.0	5	10.8	15	18.3	230	31.4	206	23.5	436	27.1
Missing	48		63		111		314		437		751	

**Table 3.** Alcohol, substance or gambling problems as a single problem or combined in the Ilulissat Survey and the 2018 Health Survey. Prevalences from the Ilulissat Survey are weighted according to the sex and age distribution in the 2018 Health Survey.

	Ilulissat Survey		2018 Health Survey	
	n	%	n	%
No problem	112	67.4%	944	49.4%
One type	43	25.9%	708	37.1%
Combined (two or three) <sup>a</sup>	11	6.8%	258	13.5%
Missing	26		450	

<sup>a</sup>Combined is defined as a combination of two or three of the following; gambling problems, alcohol problems defined as a combination of AUDIT categories hazardous, harmful or addicted and use of marijuana weekly or daily.

prevalences the general population. Based on the data, the authors assessed whether a hospital setting would act as a potential setting for screening for problems with alcohol, marijuana and gambling. In general, a large proportion were abstinent, and this was found for 28% of participants in the Ilulissat Survey. Based on the AUDIT score 28% could be classified as having a potential alcohol problem in the Ilulissat Survey. Twenty-one per cent had binge drinking behaviour and 18% had gambling-related problems, while 13% had smoked marijuana within the last year. Across all types of potential alcohol, marijuana or gambling problems, the presented prevalences were lower in the Ilulissat Survey compared to the 2018 Health Survey. With regard to differences according to sex, more men reported problems in both surveys. This highlights the need for special focus on men's problematic use of alcohol, marijuana and gambling in a hospital setting. Results from the Ilulissat Survey thus indicate a further need to focus on screening and treatment of

coexisting problems with alcohol, marijuana and gambling.

In spite of the Greenlandic Hospitals role as providers of most healthcare and treatment, the Ilulissat Survey is flawed by a high degree of selection potentially introducing confounding by indication. People may be more prone to visit the hospital if they have any problems with alcohol and substances, for example as a result of harms related to the use of alcohol causing potential overestimation of prevalence. This contradicts what is found when results are compared to the 2018 Health Survey, which may reflect that most data were collected during daytime and most severe alcohol-related hospital contacts are seen in weekends and evenings in the emergency department. To get an appointment at the hospital people must call between 8 and 9am and non-acute contacts may wait up to two to three weeks to get a consultation. Given these circumstances, it would be expected that people with severe problems would not be represented in the

sample. Problems with selection in the 2018 Health Survey would also be expected to underestimate the prevalence of problems related to alcohol, marijuana and gambling due to healthy selection. In these types of surveys, experience shows that individuals with alcohol, marijuana and gambling-related problems will be underrepresented causing findings to reflect minimum prevalence; for most people, alcohol-related problems are associated with stigma, shame and loss of control, which may lead to lesser tendency to participate and inform about their problems [12]. Furthermore, it is well known that self-reported alcohol consumption is lower than real consumption [13]. One study found that people with the greatest underreported alcohol consumption were those with non-routine drinking patterns or heavy drinkers [14]. However, studies have found that people with high alcohol consumption actually tend to report more accurate consumption than people with more average consumption patterns [15–17]. Based on the discrepancy in the literature it is not possible to determine the potential impact of drinking pattern on the findings. One study found that self-reported problem gambling was accurate and reliable and studies in Greenland have found that gambling-related problems were highly prevalent and are not only a challenge to the ones who experience these problems but are also a societal challenge [18,19]. In the two surveys, the finding of a high proportion of problem gamblers was confirmed. The significant lower proportion of women in the Ilulissat survey with gambling-related problems might reflect selection resulting in underestimation of the true proportion. The Ilulissat sample was relatively small which implies caution in the interpretation of the results. Despite this, it is important to underline that small sample sizes are inevitable in a small and scattered population such as the Greenlandic. The large majority of the questioned patients were willing to participate in the survey. Patients who declined to participate often did so based on poor eyesight (and the lack of glasses). None of the patients declined to participate with reference to inappropriateness of the questions. Despite the consent given by the staff, the handing out of questionnaires was inconsistent mainly due to the lack of time as well as the lack of routine related to the assignment. Therefore, a substantial amount of the questionnaires was handed out by the co-author, who was working at the hospital as a region physician at the time of the data collection. The problems with inconsistent recruitment may have caused further problems with selection.

Based on the findings of our study there is a potential for screening and intervention in a hospital setting. Approaching this in a culturally relevant manner has not yet been explored in a Greenlandic context and requires more research. The structure of the Greenlandic Health

System is based on a Danish model, which may hinder the most optimal approaches to healthcare and intervention. Today there is a strong focus on exploring how this constellation affects healthcare and how to make the treatment and services more culturally relevant. Investigation of how-to best screen and treat problems with alcohol, marijuana and gambling is part of this pending work and development. Results further indicate that there is a need for a particular focus on men since they are more likely to experience problems with alcohol, marijuana and gambling.

## Conclusion

Alcohol, marijuana and gambling problems are frequent in Greenland. Prevalences of problems with alcohol, marijuana and gambling among participants in the Ilulissat Survey are lower than prevalences in 2018 Health Survey. However, the prevalences in the Ilulissat Survey are still high indicating that a hospital setting may be a suitable arena for prevention, active screening, and interventions directed to help people who are experiencing these problems. Implementation of screening and treatment or referral to treatment centres in a hospital setting would have significant public health implications. Local treatment centres for alcohol, marijuana and gambling problems are now being established in all major Greenlandic cities in order to accommodate and help people who are affected by these problems. This could further be supported by close collaboration with the healthcare system.

Future studies investigating on the hospital as a setting for screening and brief intervention could focus more on consistent recruitment of patients in close cooperation with the medical staff in the planning of the survey. In line with previous studies on problems related to alcohol, substances and gambling, the limiting factor is the professionals administering the survey. Education on how to talk to patients about problems with alcohol, substances and gambling should be offered to the relevant staff.

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## Disclosure statement

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## Ethics

All participants gave informed consent. Both surveys were reported to the Greenlandic Ethics Committee.

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