

Original Research
**Suicidal expressions among the Swedish reindeer-herding
Sami population**

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Abstract: Aims: The objective of this study was to investigate suicidal expressions among reindeer-herding Sami in Sweden. Subjects: A total of 315 reindeer-herding Sami (167 men, 148 women) were compared with geographically matched reference populations comprising 1354 persons (652 men, 702 women). Methods: A questionnaire measuring different aspects of suicidal behaviour, such as exposure to suicide and suicidal ideation in significant others, own suicidal problems and attitudes towards suicide, was distributed to members of Sami villages through community leaders and to the reference group by post. Data were analysed with regard to population, gender, age group, mental health, alcohol use, work strain and formal education. Results: Comparison between groups did not reveal any differences in attitudes towards suicide; however, it did show significantly higher exposure to both suicide and suicidal behaviour in significant others in the Sami group. Compared to the reference group, both Sami women and especially Sami men reported a higher prevalence of various types of suicidal problems, particularly suicidal ideation. In addition, anxiety and alcohol use were associated with suicidal expressions in the Sami group. Conclusion: The study identifies reindeer-herding Sami men and women to be at particular risk for suicidal expressions. Specific attention should be paid to young and middle-aged Sami men with hazardous alcohol consumption and anxiety.

Keywords: suicidal expression, Sami, reindeer herding, Sweden

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Recent suicides among young male Sami reindeer-herders alarmed the Swedish Sami reindeer-herding community and was the starting point for a larger project investigating the psychosocial health situation and suicidal expressions in the group (Jacobsson, 2010).

The Sami are the indigenous people of the arctic region of Scandinavia. Over the last three decades, the rates of suicidal behaviour among several indigenous peoples have increased alarmingly, and serious problems have been identified among indigenous peoples relating to acculturation,

discrimination and rapid change of traditional structures (Berry, 1990; Bjerregaard & Lynge, 2006; Hunter & Harvey, 2002; Kvernmo & Heyerdahl, 2003; Leineweber, Bjerregaard, Baerveldt, & Voestermans, 2001). Social detachment and disruption of traditional ways of life have been described as being linked to rates of depression and alcohol abuse. This is in line with the model of suicide, relating to social integration and control (Durkheim, 1951) and still current in suicide research (Lester, 2001; Maimon & Kuhl, 2008).

The Sami community consists of approximately 100 000 people in total, about 20 000 of whom live in Sweden. The Swedish Sami population has generally been described as differing from other arctic indigenous groups in that they are highly assimilated in Swedish society. Nevertheless, they are a heterogeneous group with specific gender and occupational patterns, according to Berry's model of acculturation (Berry, 1990). While reindeer-herding Sami men after a policy of cultural separation remain

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in a relative homogenous cultural context, women often have a foot in each culture and might be described as more integrated (Hassler, 2005). The 10% (about 2000 people) of Sami in Sweden who are involved in reindeer herding have been described in previous reports as being exposed to specific risks of psychosocial and physical distress (Hassler, 2005; Sjölander, Daerga, Edin-Liljegren, & Jacobsson, 2008). The reindeer-herding group occupy a complex position as bearers of the most important symbol of Sami culture (Åhrén, 2009). The management of reindeer herding has also undergone tremendous change over the last 30 years, including motorization and other modernization (Nordin, 2002). Historically, Swedish reindeer-herders have experienced many difficulties: the Swedish colonization of Sápmi (northern part of Scandinavia) led to legislation on land ownership, at the same time as the Sami people were acknowledged the right to use traditional land for reindeer herding and fishing (Ruong, 1982). This situation is still present, 200 years later. Other collective experiences whose influence is still felt are the forced mass transfer of reindeer-herding Sami and the partial eradication of the Sami language by the Swedish education system (though the language today is undergoing a revival). Today strict legislation stipulates that land use rights for reindeer herding, as well as fishing and hunting rights, belong exclusively to the reindeer-herding Sami (Ruong, 1982). For this reason, the reindeer-herders are organized into 44 administrative Sami villages (samebyar), and 42 of these villages are members of the National Association of Swedish Sami (SSR). The Swedish Sami population is thereby split into reindeer-herders and non-reindeer-herders, with specific consequences such as conflicts within the partly self-governing Sami community (Ruong, 1982).

Studies on the health situation of the reindeer-herding population have shown that they have the same life expectancy (in years) as other people living in the north, but have a 70% higher risk of fatal accidents (making reindeer herding one of the most dangerous occupations in Sweden) (Hassler, Sjölander, Johansson, Grönberg, & Damber, 2004); the risk of suicide is also somewhat higher compared to other groups (ibid). Their socioeconomic status is substantially lower, and the level of formal education is low among reindeer-herding men (for obvious reasons as reindeer herding is not taught at university), though it is higher than reference groups among women (who are mostly the financial breadwinners in reindeer-herding families). This situation of cultural separation, long-term ongoing conflicts, financial stress, lack of control, discrimination and gender segregation has been described as linked to high rates of both anxiety and depression, especially among middle-aged reindeer-herding men (Kaiser, Sjölander, Liljegren, Jacobsson, & Renberg, 2010). However, contradicting common prejudice, a recent study has

shown that levels of alcohol misuse in the group are not higher than in comparable populations (Kaiser, Nordström, Jacobsson, & Renberg, 2011).

In the stress-diathesis model, suicide, the most serious consequence of mental health problems, is described both as a learned strategy of coping with extreme difficulties without hope of improvement, and as an outcome of stressful historical and present events, experienced by a person with a predisposition towards affective disorder. Suicide is thus both a culture-specific phenomenon, and a reaction in relation to individual vulnerability (Grunebaum et al., 2006; Rubinstein, 1986). Furthermore, the relationship between suicidal behaviour in significant others, attitudes and self-reported suicidal expressions has been described as differentiated important entities with culture-specific paths of intercorrelation (Renberg, Hjelmeland, & Kuposov, 2008). Suicide and suicidal ideation has been shown to be related to psychiatric disorders such as depression, anxiety and alcohol abuse (Cornelius & Salloum, 1995) as well as age and gender (Arsenault-Lapierre, Kim, & Turecki, 2004; Gunnell, Harbord, Singleton, Jenkins, & Lewis, 2004; Haggarty, Cernovsky, Bedard, & Merskey, 2008).

Study aims

In order to better understand the situation in reindeer-herding Sami society, the aim of the present study was to investigate diverse suicidal expressions among Swedish reindeer herders. Our hypothesis was that central attitudes to suicide (such as tabooing, preventability and normalisation), exposure to significant others' suicidal problems, and self-reported suicidal expressions would be exaggerated or different in the Sami reindeer-herding group compared to the reference groups. A further aim was to investigate whether models of influencing variables would predict suicidal problems in different ways depending on group and gender.

Method

Population

The study was conducted in a reindeer-herding Sami population and in a geographically matched reference group, stratified as urban or rural. The Swedish reindeer-herding Sami population was defined as members of one of the 42 Sami communities affiliated to the National Association of Swedish Sami (SSR), altogether constituting about 2000 persons aged 18 and older living partly or fully on reindeer herding (Hassler, Sjölander, & Janlert, 2008). The reference group of 2000 was randomly selected from people aged 18–74 years living in northern Sweden. Those living in a city constituted the urban sample and those living in small communities constituted the rural sample.

Procedure

In close contact with Sami communities and various Sami organizations, a decision was made to approach the Sami population through the chairperson of each Sami village. As all declared an interest in participating in the study 1270 questionnaires were distributed to the chairpersons. The chairs handed the questionnaires to their members at their associations' annual meetings or similar events, together with prepaid envelopes for returning the questionnaires to the research group. Questionnaires were not returned via the chairpersons. According to reports from the chairs, about 640 questionnaires in all were distributed to the Sami group. As follow-up, a person from the research team contacted each chairperson as a reminder about the study. During the same period (spring 2007), a postal questionnaire was distributed to the reference group, with one reminder.

Instrument

An instrument was developed to measure different psychosocial and mental health conditions. To assess various aspects of suicidal expression, three sections of questions were selected from the Attitudes Towards Suicide questionnaire (ATTS) (Renberg & Jacobsson, 2003). The ATTS was originally developed for population screening purposes, including exposure to suicidal problems, self-reported suicidal expressions and attitudes towards suicide. Its reliability and validity have been described in several studies (Renberg et al., 2008). In order to limit the number of questions in the questionnaire, the following items were selected from the different sections:

1. Exposure to suicidal problems (ideation and attempts) and suicide by significant others in the family and outside the family. Four questions to be answered with yes or no. Is there anyone in your closest surroundings that has had or has suicidal thoughts, has expressed suicidal plans or has threatened to take their life? A) In the family (father/mother, child, husband/wife, girlfriend/boyfriend. B) Others (other relatives, friends, work- and schoolmates, others). Has anyone you personally know committed suicide? A) In the family (father/mother, child, husband/wife, girlfriend/boyfriend. B) Others (other relatives, friends, work- and schoolmates, others).

2. Self-reported suicidal expressions, originally introduced as the Paykel et al. questionnaire about suicidal thoughts and attempts (Paykel, Myers, Lindenth.J, & Tanner, 1974), answered on a four-graded scale: often, sometimes, hardly ever, or never. 1. Have you ever felt that life was not worth living? 2. Have you ever wished you were dead; for instance, that you could go to sleep and not wake up? 3. Have you ever thought of taking your life, even if you would not really do it? 4. Have you ever reached the point where you seriously considered taking your life,

or perhaps made plans how you would go about doing it? 5. Have you ever made an attempt to commit suicide? We also asked a further question: How often have you thought about the meaning of life?

3. Attitudes toward suicide. Four central items were selected: 1. Is there a risk of evoking suicidal thoughts in a person if you ask if the person has thoughts of committing suicide? 2. Suicide is a subject one should not talk that much about. 3. It is in every case possible to help a person who has suicidal thoughts. Almost all persons have sometime had suicidal thoughts. Responses were given on a five-point Likert scale: strongly agree, agree, undecided, disagree, and strongly disagree.

In the statistical analysis, prevalence of self-reported suicidal expression was classified as an affirmative response to any of the questions, i.e. all response alternatives except "never" were aggregated (Renberg, 2001). Comparative measures of attitudes toward suicide was both calculated as mean values and as categorised in three groups: affirmative, undecided and disagree (ibid). Both measures showed similar results.

For alcohol consumption, we used the Alcohol Use Disorder Identification Test (AUDIT). This test has been frequently used to screen for hazardous and harmful alcohol use (Babor, Higgins-Biddle, Saunders, & Monteiro, 2001; Bergman & Kallmen, 2002), with good psychometric properties in different cultural contexts (Leonardson et al., 2005). It consists of 10 items with an item score between 0 and 4. The recommended cut-off score of ≥ 8 for men and ≥ 6 for women was used to indicate hazardous or harmful use. For the detection of affective disorders, we used the Hospital Anxiety and Depression Scale (HADS) (Bjelland, Dahl, Haug, & Neckelmann, 2002; Herrmann, 1997). HADS has also been tested with good psychometrics in different cultural contexts (Kugaya, Akechi, Okuyama, Okamura, & Uchitomi, 1998; Montazeri, Vahdaninia, Ebrahimi, & Jarvandi, 2003). It consists of 14 items covering symptoms of anxiety (HADS-A) and depression (HADS-D). In our study, the four-point ordinal scale was dichotomized with a cut-off at ≥ 8 for each scale, detecting mild to severe disorder (Herrmann, 1997). To measure work-related stress, 11 items from the Job Control Questionnaire (JCQ) were used. The JCQ was created by Karasek and colleagues (Karasek, Baker, Marxer, Ahlbom, & Theorell, 1981) based on the demand-control model. The JSQ is today well validated and is widely used in various job situations (Van der Doef & Maes, 1999; van der Doef, Maes, & Diekstra, 2000). Because of the uniqueness of the occupation, there are no validated instruments measuring stress in reindeer herding specifically; the job-strain variable was therefore used with care. The questionnaire also included questions on gender, level of formal education and age.

Table 1. Sociodemographic characteristics of the Sami, urban and rural groups. All percentages are valid percentages.

	% or Mean (SD)			
	All (N=1393)	Sami (n=351)	Urban (n=679)	Rural (n=714)
Gender				
Female	51.5%	47.3%	51.7%	53.2%
Male	48.5%	52.7%	48.3%	46.8%
Missing	1.8%	9.1%		
Age (Mean, SD)				
18-29	16.1%	17.8% ^R	22.7% ^R	9.0%
30-49	35.6%	46.5% ^{U,R}	34.8%	31.4%
≥50	48.3%	35.6% ^{U,R}	42.8% ^R	59.7%
Missing information	1.1%	5.7%		
Years of education				
≤9 years	28.9%	34.7% ^U	18.2% ^R	36.3%
10-12 years	44.0%	39.1%	45.0%	45.5%
≥14 years	27.1%	26.2% ^{U,R}	36.8% ^R	18.2%
Missing information	1.4%	2.3%	1.2%	1.3%

^U Statistically significant difference to the urban population.

^R Statistically significant difference to the rural population.

Statistical analysis

Statistical analysis was performed using SPSS (version 18.0; SPSS Inc., Chicago, IL, USA). For descriptive comparative statistics we used chi-square for categorical data and the T-test for comparing mean values. Logistic regression analyses (Forward method) were conducted to explore determinants of more serious suicidal problems, defined as an affirmative answer to the question Have you ever planned to take your own life? The item was chosen because of its properties of being both a distinct and a serious entity in terms of suicidal problems. Model fit was assessed using the Hosmer and Lemeshow Test and Omnibus Tests of Model Coefficients. The explanatory level for the regression model was calculated by Cox and Snell (R Square). The determinants used in the regression analyses were population (Sami, reference), gender, age group (18-29, 30-49, ≥50), depression and anxiety (HAD), use of alcohol (AUDIT), and work-related stress. The significance level was set at $p < 0.05$ (two tailed).

Reliability

The internal consistency (Cronbach's alpha) was 0.82 for the Sami population and 0.86 for the reference group on the HADS-A subscale. The Cronbach's alpha of the HADS-D subscale was 0.79 and 0.81 respectively. For the Job Control questionnaire, the Cronbach's alpha was 0.64 for Demand and 0.62 for Control for the Sami populations, while for the reference group the corresponding figures were 0.67 and 0.63 respectively. The internal consistency of AUDIT was 0.84 for the Sami group and 0.80 for the reference group. This was

considered satisfactory and corresponds to previous review studies (Allen, Litten, Fertig, & Babor, 1997). The study was approved by the regional research ethics committee in Umeå, Sweden.

Results

In total 351 persons (54.8%) responded to the questionnaires distributed to the Sami population. In the reference group, there were 679 urban and 714 rural respondents (a 69.7% response rate). The dropout analysis, which could only be conducted for the reference group, showed no differences between respondents and non-respondents with regard to gender and age distribution. Due to internal missing values, the quantity of n differs between tables.

There was no difference in gender distribution between the responding Sami and reference group. In the Sami group, there was a significantly higher proportion of respondents in the 18-29 years age group compared to the rural reference group (Table 1), and a higher proportion of persons aged 30-49 and a lower proportion of persons aged ≥50 years compared to both reference groups. The Sami group reported a lower level of formal education compared to the urban reference group, but a higher level compared to the rural reference group.

Exposure to suicidal expressions in significant others

Compared to urban and rural men and women in the reference group, both Sami reindeer-herding men and women reported significantly higher

Table 2. Experience of suicidal problems in significant others, among reindeer-herding Sami and in a geographically matched reference group, stratified by gender. Measured by Attitudes Towards Suicide (ATTS).

Item	Reindeer herders						Reference group					
	Men N=167		Women N=148		Total N=341		Men N=652		Women N=702		Total N=1393	
	n	%	n	%	n	%	n	%	n	%	n	%
Ideation												
In the family	34	21.1 ^{S,U,R}	41	27.7 ^{S,U,R}	81	23.8 ^{S,U,R}	78	12.1	120	17.1	198	14.7
Among others	36	37.5 ^{S,U,R}	59	40.4 ^{S,U,R}	125	37.2 ^{S,U,R}	120	18.7	172	24.5	292	21.7
Suicide												
In the family	11	7.0	8	5.8	23	7.1	33	5.3	45	6.7	78	6.0
Among others	107	64.1 ^{S,U,R}	101	67.8 ^{S,U,R}	220	63.2 ^{S,U,R}	286	44.3 ^U	309	43.3 ^U	595	43.8

S Statistically significant difference to the reference population.

U Statistically significant difference to the urban population.

R Statistically significant difference to the rural population.

proportions of contact with suicidal expressions (chisquare test), i.e. suicidal ideation within the family or in others or completed suicide in others (Table 2). In the table, urban and rural respondents have been collapsed into a single reference group; however, specific differences are indicated.

Self-reported suicidal expression

In total, reindeer-herders reported significantly higher prevalences in four of the five variables measuring different severities of suicidal expression (Table 3). For the variable measuring the least severe level (thoughts about the meaning of life), no difference between groups was found. In contrast to the reference group, no differences were found between Sami men and women regarding self-reported suicidal ideation; however, comparing Sami men with men in the reference group, Sami men reported significantly higher prevalence of suicidal expression at the more severe levels, with the exception of suicide attempts. Sami women reported higher prevalence than women in the reference group for suicidal ideation and plans. For the same question, reference group men living in rural areas reported a significantly lower proportion than any other group.

In a subanalysis stratifying the results by gender and age group (not presented in the tables), Sami reindeer-herding men in the 30-49 years age group reported significantly higher proportions for death wishes, ideation and plans than men in the reference groups. Young Sami men (aged 18-29 years) reported similar group- and gender-specific prevalence to the reference group. Reindeer-herding Sami women in the oldest age group (≥ 50 years) reported a higher prevalence of death wishes than the reference group,

but for other questions no significant differences were found in this age group. Regarding suicide plans, young and middle-aged reindeer-herding men and women reported at least twice the prevalence compared to the reference group, with middle-aged reindeer-herding men reporting a prevalence almost three times higher.

Attitudes towards suicide

Using T-test for comparing mean scores on attitude questions showed that there were no group differences regarding attitudes on preventability or eventual risks in talking about suicide, generally it was reported that there is little risk in talking about suicide (Table 4).

However, Sami men to a higher extent than men in the reference group agreed with the statement that "almost everyone has thought about suicide".

Influencing factors

Possible determinants for suicidal plans were calculated with logistic regression (forward method) and are shown in Table 5.

When entering each independent variable one by one in a logistic regression analysis, all showed significant predictability for reporting suicide plans (crude OR). Controlling for other variables (not presented in the tables), being Sami still meant about twice the risk compared to being in the reference group. When calculating OR for group and gender separately, the predicting variables for the reindeer-herding Sami's high proportion of self-reported suicidal plans were not age or education (as in the reference group) but anxiety for Sami women and anxiety and alcohol for Sami men.

Table 3. Prevalence of self-reported suicidal expression in significant others, among reindeer-herding Sami and in a geographically matched reference group, stratified by gender. Measured using Attitudes Towards Suicide (ATTS).

Item	Reindeer herders						Reference group					
	Men N=167		Women N=148		Total N=341		Men N=652		Women N=702		Total N=1393	
	n	%	n	%	n	%	n	%	n	%	n	%
Meaning of life	140	83.8	127	84.7	282	80.8	531	81.4 ^R	602	83.5	1133	82.5
Life weariness	87	52.1 ^{S,U,R}	72	48.0	170	48.7 ^S	234	35.9 ^R	320	44.3	554	40.3 ^G
Death-wishes	59	35.5 ^{S,U,R}	62	41.6 ^{S,R}	130	37.5 ^S	140	21.4 ^R	226	31.3	366	26.6 ^G
Suicidal ideation	60	36.1 ^{S,U,R}	61	40.7 ^{S,U,R}	130	37.4 ^S	131	20.1 ^R	194	26.9	325	23.6 ^G
Suicidal plans	36	21.7 ^{S,U,R}	30	20.0 ^{S,U,R}	72	20.7 ^S	58	9.0	84	11.7	142	10.4
Suicide attempt	8	4.8	7	4.8	17	5.0	23	3.5	41	5.6	64	4.6

^S Statistically significant difference to the reference population.

^U Statistically significant difference to the urban population.

^R Statistically significant difference to the rural population.

^G Statistically significant difference between men and women within groups.

Table 4. Mean item scores on the on the four attitude questions, with regard to group (reindeer herders, reference groups – urban and rural). Gender specific and total. Scoring 1 (strongly disagree) to 5 (strongly agree). Measured using Attitudes Towards Suicide (ATTS).

<i>Item</i>	Reindeer herders			Reference group		
	Men N=167 Mean (SD)	Women N=148 Mean (SD)	Total N=341 Mean (SD)	Men N=652 Mean (SD)	Women N=702 Mean (SD)	Total N=1393 Mean (SD)
There is a risk of evoking suicidal thoughts in a persons mind if you ask about it.	2.52 (1.12)	2.15 (1.03)	2.35 (1.08) ^G	2.37 (1.06)	2.23 (1.07)	2.29 (1.07) ^G
Suicide is a subject that one should rather not talk about.	2.44 (1.18)	1.96 (1.08)	2.33 (1.28) ^G	2.40 (1.24)	2.10 (1.20) ^R	2.24 (1.23) ^G
It is always possible to help a person with suicidal thoughts.	3.87 (1.05)	3.65 (1.02)	3.78 (1.02)	3.74 (1.06)	3.69 (1.00)	3.72 (1.03)
Almost everyone has at one time or another thought about suicide.	2.75 (1.31) ^{S,U,R}	2.53 (1.18)	2.59 (1.27) ^S	2.39 (1.88)	2.34 (1.24)	2.37 (1.21)

^S Statistically significant difference to the reference population.

^U Statistically significant difference to the urban population.

^R Statistically significant difference to the rural population.

^G Statistically significant difference between men and women within groups.

Table 5. Crude and adjusted odds ratios for subjects answering “yes” to having had suicidal plans¹, stratified by gender and population.

		Sami		Reference group	
		Men N=154	Women N=144	Men N=312	Women N=341
		OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)
Population	Sami	1.93 (1.50-2.48)*			
	Control	1.00 (REF)			
Gender	Women	1.42 (1.07-1.88)*			
	Men	1.00 (REF)			
Age	18-29	3.52 (2.59-4.78)*		2.08 (1.04-4.16)	2.05 (1.15-3.66)
	30-49	2.61 (2.03-3.36)*			2.03 (1.27-3.24)
	≥50	1.00 (REF)		ref	ref
Alcohol		2.36 (1.90-2.92)*	2.73 (1.44-5.19)	1.63 (1.10-2.40)	1.59 (1.08-2.36)
Education	≤ 9 years	1.00 (REF)		ref	
	10-12 years	2.87 (2.14-3.85)*		3.46 (1.46-8.21)	
	≥13 years	2.40 (1.74-3.31)*		3.46 (1.46-8.21)	
Anxiety		2.76 (2.39-3.20)*	2.40 (1.46-3.94)	3.19 (1.78-5.72)	2.27 (1.66-3.12)
Depression		2.66 (2.13-3.27)*			2.11 (1.65-2.71)
Job Strain		2.64 (1.33-2.01)*			

¹ Measured by the question “Have you ever planned to take your life?”

* Statistically significant at p<0.05 level.

Discussion

This study clearly shows that persons in the Sami reindeer-herding community are highly exposed to suicidal expressions in significant others compared to a geographically matched reference group. This could be due both to the Sami community's characteristic as a geographically widespread but nevertheless closely connected indigenous and professional group and to an actual higher problem load in the Sami community. People living in a community exposed to suicidal expressions are more prone to include suicide in possible actions than those living in less exposed communities. This is the case even if the exposed expressions are not completed suicides or if there are no attempted suicides in the family but the suicidal expressions are reported in some way. This is particularly the case if reports do not include successful coping with suicidal ideation, rather only reports of suicide or reports by experts of suicide epidemics (Niederkrotenthaler et al., 2010).

On a scale of severity from more common and unstigmatized thoughts about the meaning of life to severe life-threatening actual plans, the study shows that the reindeer-herding group commonly thinks about "the meaning of life" just like everyone else. However, at the more severe end of the scale, both reindeer-herding men and women reported alarming frequencies of suicidal thoughts and plans, especially as responses from this study's reference group correspond to results from earlier (1986 and 1996) studies in the same area (Renberg, 2001). The results show that one in three reindeer-herding men and women had had thoughts of committing suicide and one in five reported actual plans. This is twice the frequency of the reference group. Suicidal thoughts and plans are understood in direct relation to psychological suffering and failed hope for a future solution; these results could thus reflect the present difficult situation of Swedish reindeer-herders.

In this study suicidal thoughts are as common among men as among women, but among reindeer-herders, as in the total Swedish population, completed suicides are more common among men. This reflects the fact that there is a complex relation between suicidal ideation, attempts and suicide. In addition there seem to be gender-specific ways of coping with experiences of being in an unbearable situation (Bjerkeset, Romundstad, & Gunnell, 2008).

The results of the current study may support earlier findings that of multifaceted correlation between attitudes to suicide and suicidal expression, as no differences were found in attitudes although there were several differences in suicidal expression. Suicidal expression is a complex phenomenon with several contributory factors, in this study highlighted by different models for different groups. While both

education and age predicted the risk for both men and women in the reference group, this was not the case for the Sami group. This could suggest that the life situation for Sami reindeer-herders does not change as a consequence of higher age or higher formal education, at least not in ways that influence suicidal plans. Regarding alcohol, the only group where alcohol use was not a predicting factor was Sami women, but all groups shared symptoms of anxiety as an important variable. Based on an earlier study it has been suggested that reindeer-herding women are at little risk of hazardous alcohol consumption (Kaiser et al., 2011). We can conclude here that the current study does not show that the few Sami women who report hazardous drinking behaviour have a higher risk of suicidal expression. What is even more important are the remaining predictors. When predicting suicidal plans among reindeer-herding women, the only factor that was contributory according to the model was symptoms of anxiety: a reindeer-herding woman with symptoms of anxiety has a more than three times greater risk of having suicidal thoughts than a reindeer-herding woman without such symptoms. The situation for reindeer-herding men, with anxiety more than doubling the risk and hazardous alcohol consumption almost tripling it, suggests that alcohol consumption and symptoms of anxiety should be prioritized.

Taking all the results together, the study shows that suicidal expressions are common among reindeer-herding men and women, and men in the 18-39 age group in particular are at great risk compared to the reference groups. This age- and group-specific risk is not related to age per se, nor to education, but to high levels of anxiety (and hazardous alcohol consumption for Sami men). As already presented, this group reports a high proportion of anxiety, and more recent studies have shown the significance not only of depression but also of anxiety in relation to suicide attempts (Nepon, Belik, Bolton, & Sareen, 2010). The young and middle-aged reindeer-herders high levels of anxiety and suicidal expression, in both genders, might be due to the fact that the young and middle-aged are in the beginning or middle of their occupational development. They are thereby involved in the many conflicts and the to some extent unbearable situation for reindeer-herding management. For men at risk, this will also be reflected in hazardous alcohol consumption. Further studies are needed to investigate the experiences of the multi-level strain situation faced by Swedish Sami reindeer-herders, and as suicidal expression is also a culture-specific phenomenon that is difficult to explain without qualitative data (Hjelmeland, 2010), research on this group should take contextual aspects into consideration.

Methodological considerations

Given the delicate subject of suicide and the unique nature of the study population (a small population in close internal contact, though geographically widespread), the need for individual confidentiality was great. We therefore have limited information regarding the respondents and their representativity, weakening the external validity. Nevertheless, according to the information we received at follow-up, the questionnaires reached a wide spectrum of reindeer-herders. For the ATTS, only a limited number of items were chosen; for this reason we were unable to measure broader aspects of attitudes towards suicide, such as incomprehension, acceptance of suicide and condemnation. Another methodological drawback of this study was the different methods of collecting data between the two groups. This was necessary because of practical reasons, but still a limitation concerning the generalizability of group-comparative results.

Conclusions

The study identifies reindeer-herding Sami men and women to be at particular risk of suicidal expressions. Special attention should be paid to young and middle-aged Sami men with hazardous alcohol consumption and reporting symptoms of anxiety.

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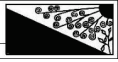
Declaration of interest

None of the authors has any conflict of interest regarding the present study.

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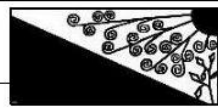


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