

ORIGINAL ARTICLE

SELF-MUTILATION AND SUICIDAL BEHAVIOUR IN SAMI AND NORWEGIAN ADOLESCENTS: PREVALENCE AND CORRELATES

Siv Kvernmo ¹, Jan H. Rosenvinge ²

¹Department of Child and Adolescent Psychiatry, University Hospital of North Norway/Regional Centre of Child and Adolescent Mental Health, Region North, Institute of Clinical Medicine, Faculty of Health Sciences, University of Tromsø, Tromsø, Norway

²Department of Psychology, Faculty of Health Sciences, University of Tromsø, Tromsø, Norway

Received 31 December 2008; Accepted 26 May 2009

ABSTRACT

Objectives. To study the prevalence and psychosocial and ethnocultural correlates of self-mutilation and/or suicidal behaviour in Indigenous Sami and majority Norwegian adolescents in north Norway.

Study design. A cross-sectional questionnaire study.

Methods. A total of 487 students, aged 13–16 years in 21 junior high schools and 247 parents participated in this school based questionnaire study conducted in 1990 in Finnmark, the county in Norway with the highest suicide rates. Sociodemographics, substance use, thriving at school, ethnocultural factors such as ethnic context, ethnic identity, ethnic language competence and ethnic parentage, self-reported as well as parent-reported behavioural/emotional problems were assessed.

Results. Self-mutilation and/or suicidal attempts within the last 6 months were reported by 12.5% of the adolescents and 14.8% reported having suicidal thoughts. In univariate analyses, significant gender differences occurred for both ethnic groups, with more girls reporting self-mutilation and suicidal behaviour. However, in logistic regression analyses adjusting for all other significant variables, the gender difference disappeared. No significant ethnic differences occurred in prevalence. Although factors associated with self-mutilation and suicidal behaviour varied between Sami and Norwegian adolescents, self-reported anxiety/depression was a strong and significant correlate to both self-mutilation/suicide attempts and suicidal thoughts in both ethnic groups. Parents reported less emotional/behavioural problems associated with self-mutilation and/or suicidal behaviour than the adolescents did. Ethnic identification in Sami and ethnic context in Norwegian adolescents occurred in independent analyses as significantly

related to self-mutilation and/or suicidal behaviour, but turned insignificant when adjusting for all other significant variables. **Conclusions.** In contrast to several other Indigenous groups the prevalence of self-mutilation and/or suicidal behaviour did not differ between Sami and Norwegian adolescents. In both ethnic groups, the effect of ethnocultural factors disappeared when controlled for other variables such as anxiety/depression. Across both ethnic groups, anxiety and depression problems occurred as a common and significant correlate for self-mutilation and suicidal behaviour.

(Int J Circumpolar Health 2009; 68(3):235-248)

Keywords: Self-mutilation, suicidal behaviour, adolescents, Sami, Indigenous, Norway

INTRODUCTION

High and increasing rates of suicidal behaviour among adolescents are a major health issue in several Indigenous groups, such as the Maori people in New Zealand, Native Americans and Alaskan Natives in the U.S., First Nations in Canada and Aborigines in Australia (1-9). Over the past few decades there has been an alarmingly high increase in suicide rates among Indigenous groups in the Arctic, particularly in young men, which has been described as having reached an epidemic level (2,10-15). It has been declared that certain Indigenous groups have the highest suicide risk of any identifiable cultural (or ethnic) group (8,16).

According to findings from a WHO multi-centre study conducted in young people between 15 and 24 years of age, there is a close link between an increase in suicide rates and an increase in rates of suicide attempts (17). In many Indigenous groups, extremely high rates of suicidal ideation and attempted suicides among adolescents and young adults are found, while in other Indigenous groups like the Sami the rate is no higher than among majority peers

(6,8,10,18,19). Non-suicidal self-mutilation or self-harming behaviour has also increased in adolescent populations. Deliberate self-harm differentiates from suicidal attempts because there is no direct intention to die (17,20). Deliberate self-harm is often explained by the need to erase or stop unbearable feelings (17,20). Recent studies on non-suicidal self-harming behaviour show high rates, ranging from 6–15%, in representative samples of adolescents (21,22). The knowledge about deliberate non-suicidal self-harm in Indigenous adolescents is sparse.

The number and types of factors associated with suicidal behaviour among Indigenous adolescents suggest a multicomponent aetiology. Several studies on suicide in Indigenous people indicate that minority status, loss of cultural or ethnic identity and a rapid modernization process are contributing to this phenomenon (10,23,24). In ethnic communities in arctic areas the cultural distance from the mainstream society is prominent and a rapid modernization process has contributed to major cultural and societal changes. These features may create a vulnerability to suicidal

and self-mutilating behaviours among those who have not adapted to this process, including efforts to promote and preserve their original culture (13,16). Chandler and Lalonde found a clear association between levels of community control or autonomy and suicide rates among Aboriginal peoples in Canada (18). Cultural discontinuity has also been identified as a risk factor for suicidal behaviour in Indigenous adolescents (25). It is claimed that mediating mechanisms contributing to high levels of emotional distress and mental health problems such as depression, anxiety, substance use and suicidal behaviour can be closely related, for instance, to issues of individual identity (23) and acculturation processes (2,10,13,19). Unfortunately, research on suicidal behaviour in Indigenous adolescents has mainly focused on risk factors rather than protective factors. However, some studies of suicidal behaviour have reported that among young Inuit in Nunavik protective factors include good school performance and regular attendance at church (23) and that among American Indian and Alaskan Native youth these include discussing problems with friends or family members, having a good emotional health, and a sense of connectedness with the family (11).

Little knowledge is available about self-mutilation or suicidal behaviour among the Sami population. In a recent study of older Sami adolescents, no significant difference was found in the rate of suicidal behaviour (attempts and ideation) compared with their Norwegian peers (26). In a study of suicide mortality between 1970 and 1998 in north Norway, a significantly higher increased risk was found among the Sami, particularly in young Sami men residing in the Sami-dominated areas and among those not belonging

to the semi-nomadic reindeer herders (19). A cluster of suicides took place in a Sami community in the last part of the 1980s. In connection to this cluster of suicides, cultural factors such as loss of ethnic identity and assimilation were launched as possible explaining factors (27).

This paper focuses on suicide attempts and associated risk factors among young adolescents from an area (i.e., Finnmark County) with one of the highest suicide rates in Norway. We set out to address the following research questions: (1) Are there ethnic differences in the prevalence of self-mutilation/suicide attempts and suicidal thoughts? (2) Are there ethnic differences in patterns of associated risk and protective factors? (3) What is the relation between ethnic (Sami or Norwegian) identification, ethnic context, ethnic language competence and self-mutilation/suicidal behaviour?

MATERIAL AND METHODS

Sample

A total of 487 students in Grades 7, 8 and 9 in junior high school and 247 parents participated in the study in 1990. The students were 13 to 16 years old and attended 21 junior high schools in 8 municipalities in the northernmost county in Norway, Finnmark. The schools were selected to represent the county geographically and ethnically. The study sample consisted of 447 adolescents, 212 boys (47.4%) and 235 girls (52.6%), who completed both the suicidal behaviour items and the ethnic items. Of the sample, 241 students (53.9%) were Sami and 206 (46.1%) were Norwegians and all came from rural areas. The mean age (SD) for the Sami and Norwegian subjects were 14.9 (0.9) years for the Norwegians and 14.4 (0.9)

years for the Sami, respectively ($t [1,445]=1.9$, $p=.046$). In the study sample a total of 212 parents completed the suicidal behaviour items of whom 96 (45.3%) were Sami and 116 (54.7%) were Norwegian students. The sample characteristics of the Sami and Norwegian participants are described in Tables I and II.

Procedure

The study was a self-report survey, carried out at the schools and administered by the teachers. All students in the same school completed the questionnaires anonymously at the same time. Students participated on a voluntary basis, and written parental consent was required. Many parents did not respond to the invitation to the study. Participation rates varied among students at the different schools (34% to 100%), with an overall response rate of 65%. The response rate among the students in the Sami highland was 57% compared with 72% in the Norwegian coastal area, possibly indicating a higher scepticism for participation among Sami subjects. Both Sami and Norwegian versions of the parent questionnaire (CBCL) were mailed to parents who gave their consent. The response rate for parents was low at 35%. The study is described in detail elsewhere (30).

Measures

The student questionnaire included the Youth Self Report (YSR, version 1981) (29) and items on sociodemographic background, family status, ethnicity, ethnic identity, ethnic context, ethnic language competence, thriving at school and substance use. The parents completed the Child Behaviour Check List (CBCL) only (28). Norwegian and Sami versions of the questionnaires were applied. Professional (Sami/Norwegian) translators had translated the YSR

and CBCL into Sami with an independent back translation.

Self-mutilation and/or suicide attempts were assessed using item 18 (“I deliberately try to hurt or kill myself” and “deliberately harms self or attempts suicide”) from the YSR and CBCL, respectively (20). Suicidal thoughts were assessed with the YSR statement, “I think about killing myself” from the YSR and the corresponding statement from the CBCL, “Talks about killing her-/himself.” Response options were “not true,” “somewhat or sometimes true” and “very true or often true” and were scored as 0, 1 or 2 for the last 6 months. Self-mutilation and/or suicide attempts and suicidal thoughts were defined as being present if responses to the answers were scored as 1s or 2s.

Family status was measured by the item that identified the type of family the adolescent was living in using the following options: (1) intact family, (2) single-parent family, (3) step-parent family or (4) outside the family.

Parents’ educational status. The parents’ occupations were not asked for in order to preserve the anonymity of the participants, who lived in sparsely populated areas. However, participants were asked to report their parents’ educational levels. Parents’ educational levels (the parent with most years of education) were included in the analyses, as a measure related to socio-economic status.

Emotional/behavioural problems were measured by the YSR and the CBCL (28,29). Only the narrow-band scales were used here. The scale “anxious/depressed” and “aggressive behaviour” had good internal consistency (Cronbach $\alpha>.75$) for both genders and ethnic groups.

Suboptimal consistency (>60) was obtained for the YSR “withdrawn” and “social problems” in both ethnic groups and for “thought problems” for the Norwegian adolescents. This was also the case for the CBCL scale “thought disorders” in both ethnic groups, for “social problems” for the Norwegian adolescents, and for “delinquent behaviour” for Norwegian girls. Response options for each item were “not true” (0), “somewhat or sometimes true” (1) and “very true or often true” (2), and scored for the last 6 months.

Daily smoking was measured by the question “Do you smoke?” with the following options: (1) No, (2) Rarely, (3) Less than 10 cigarettes per day, (4) 10–20 cigarettes per day and (5) More than 20 cigarettes per day. Responses to options (1) and (2) were categorized as “No” (0) and (2–5) as “Yes” (1).

Alcohol, cannabis and sniffing first-time use was measured by confirmatory responses (0=No, 1=Yes) to the following questions: “Have you ever drank alcohol?” “Have you ever used hashish or marijuana?” and “Have you ever done sniffing?”

Intoxication frequency was measured by the question, “How many times during the last 4 weeks have you drank more than a couple of mouthfuls of wine, beer or liquor?”

Thriving at school was measured by using 3 items that tracked attitudes towards school: “Do you think you will succeed at school in the future?” “Do you feel well at school?” and “Do you like being together with your classmates?” All items were scored on a 4-point scale from (1) Very bad to (4) Very good.

Academic competence was measured by the academic competence scales from the YSR.

Sami ethnicity. Ethnicity was classified as Sami or Norwegian. The adolescents reported their own ethnicity or the ethnicity of their parents. They also reported language competency for themselves, their parents and their grandparents. As a result of experiencing stigmatization and discrimination, many Sami avoid reporting their Sami background. Therefore, classification of Sami ethnicity based on self-reported ethnicity is shown to be falsely low (30,31). However, Sami language competency of parents or grandparents can be considered a reliable indication of ethnicity. The criteria used for ethnic categorization are in line with those of Kvernmo and Heyerdahl described in an earlier publication from this study as well as in other epidemiological studies (30-32).

Ethnic context. Communities were classified as being located in either the coastal or highland area, depending on where the students lived. The two types of ethnic communities represent different contexts with regard to acculturative experiences, ethnic support and density of the Sami population. The coastal area is perceived as being more Norwegian dominated, and the highland area as more Sami dominated.

Ethnic self-identification was defined by how the adolescents’ self-identified on a multiple-choice question: “I perceive myself as....” The alternatives provided were “Norwegian,” “Sami,” “Finnish” or “Other: Please specify....” The participants could choose one or more alternatives.

Ascribed ethnic identification was measured by the adolescents' perception of ascribed ethnic identity from their friends, classmates and others on a multiple-choice question: "I believe my friends identify me as..." The alternative responses were "Norwegian," "Sami," "Finnish" or "Other: Please specify..." The participants could choose one or more alternatives.

Ethnic language/mother tongue. The students were asked to report what languages they spoke or had learned at home by answering this multiple-choice question: "At home I have learned..." The alternative responses provided were "Norwegian," "Sami," "Finnish" or "Other: Please specify..." The participants could choose one or more alternatives. If they chose Sami as one of the options or as the only one, they were categorized as Sami-speaking, otherwise as non-Sami speaking.

Statistics

For the total group, and then for each ethnic group, all explanatory variables were independently analysed by t-tests and chi-square tests by respondents reporting self-mutilation and/or suicide attempts and for respondents who had had suicidal thoughts. Then, logistic regression analyses were conducted for each ethnic group, including only the significant variables from the univariate analysis. Because of the size of the total sample and the subsamples, the statistical significance level was defined at the .05 level. All analyses were performed using the SPSS software (SPSS for Windows version 14.0).

RESULTS

In the total sample, 12.5% (56) of the students reported self-mutilation or suicide attempts within the last 6 months with 3.4% (15) of the participants stating this to be "very true or often true." Suicidal thoughts were reported by 14.8% (67) of the students with 4.5% (20) of these even reporting this as "very true or often true." Self-reported self-mutilation or suicidal attempts and suicide thoughts were strongly correlated ($\chi^2[1, 447]=133.9, p<.0001$).

Significant gender differences did occur, with 16.8 % (40) of the girls and 7.2 % (16) of the boys reporting self-mutilation or suicide attempts ($\chi^2[1, 455]=8.3, p=.003$). For suicidal thoughts, a similar gender difference occurred, with more girls (19.9%) (46) than boys (9.9%) (20) reporting suicidal thoughts ($\chi^2[1, 449]=9.8, p=.001$). Insignificant differences occurred between Sami and Norwegian adolescents with more Norwegian subjects reporting self-mutilation or suicide attempts and more Sami subjects reporting suicidal thoughts. Of Sami subjects, 11.2% (27) reported self-mutilation or suicide attempts compared with 14.5% (27) among their Norwegian peers, respectively. The prevalence for suicidal thoughts was 16.2% (39) for Sami adolescents and 13.1% (27) for their Norwegian peers, respectively. With regard to age or socio-economic status, no significant differences occurred for self-mutilation/suicide attempts or suicidal thoughts.

For the 212 parent-reported cases of suicidal behaviour that were available, the prevalence of parent-reported self-mutilation or suicide attempts was 0.5% (1) and 2.4% (5) for suicidal thoughts. A significant associa-

tion between self-reported and parent-reported suicidal thoughts was found ($\chi^2[1,213]=13.5$, $p<.0001$); only 10.8 % (4) of parents confirmed their adolescents' suicidal thoughts while 80% (4 of 5) of the parent-reported suicidal thoughts were confirmed by the students.

Univariate analyses conducted for each ethnic group showed that family status (living in a step-parent family) and low thriving at school were associated with self-mutilation or suicide attempts in Norwegian adolescents while cannabis use was related to self-mutilation or suicide attempts in Sami adolescents. For both ethnic groups, low academic competency, daily smoking, having ever been drunk, higher intoxication frequency and sniffing were all common factors associated with self-mutilation or suicide attempts (Table I).

Results of self-reported emotional/behavioural problems showed that for all problems areas on YSR except for "social problems" for the Sami, the highest scores were obtained by students who self-reported self-mutilation or suicide attempts compared to their peers who did not (Table III). Parent-reported emotional/behavioural problems were less correlated with self-reported self-mutilation or suicide attempts than self-reported, particularly among Norwegian parents. Among the Sami, parent-reported narrow band scales such as "withdrawn," "somatic complaints," "attention problems" and "delinquent behaviour" were all significantly related to self-reported self-mutilation or suicide attempts, while among the Norwegian adolescents, "delinquent behaviour" was the only significant narrow band scale (Table IV).

Table I. Self-mutilation/suicide attempts and sociodemographic and psychosocial characteristics in Sami and Norwegian adolescents.

| | Sami adolescents Self-reported self-mutilation/suicide attempts | | | Norwegian adolescents Self-reported self-mutilation/suicide attempts | | | Total Self-reported self-mutilation/suicide attempts | | |
|------------------------|--|----------------------|---------------------|---|----------------------|---------------------|---|----------------------|---------------------|
| | Yes n=27 n (%) | No n=214 n (%) | F/ χ^2 | Yes n=29 n (%) | No n=177 n (%) | F/ χ^2 | Yes n=56 n (%) | No n=391 n (%) | F/ χ^2 |
| Family status | $\chi^2=3.9$ | | | $\chi^2=11.0^*$ | | | $\chi^2=12.6^{**}$ | | |
| - Intact family | 15 (55.6) | 149 (69.6) | | 14 (48+ +.3) | 124 (70.1) | | 29 (51.8) | 273 (69.8) | |
| - Single-parent family | 4 (14.8) | 33 (15.4) | | 6 (20.7) | 35 (19.8) | | 10 (17.9) | 68 (17.4) | |
| - Step-parent family | 7 (25.9) | 29 (13.6) | | 9 (31.0) | 17 (9.6) | | 6 (28.6) | 46 (11.8) | |
| - Outside family | 1 (3.7) | 3 (1.4) | | 0 (0.0) | 1 (0.6) | | 4 (1.0) | 1 (1.8) | |
| Academic competence | 1.8 (0.5) | 2.0 (0.5) | F=2.4* | 1.9 (0.4) | 2.1 (0.5) | F=2.9** | 1.8 (0.5) | 2.1 (0.5) | F=3.6*** |
| Thriving at school | 3.1 (0.6) | 3.0 (0.6) | F=1.5 | 3.0 (0.5) | 3.3 (0.5) | F=3.0** | 3.0(0.5) | 3.2 (0.7) | F=2.8** |
| Daily smoking | 11 (40.7) | 37 (17.3) | $\chi^2= 8.2^{**}$ | 10 (34.5) | 14 (8) | $\chi^2=16.6^{***}$ | 21 (37.5) | 51 (13.1) | $\chi^2=21.4^{***}$ |
| Alcohol debut | 22 (81.5) | 79 (36.9) | $\chi^2=19.6^{***}$ | 17 (58.6) | 56 (31.6) | $\chi^2=7.9^{**}$ | 39 (69.6) | 135 (34.5) | $\chi^2=25.4^{***}$ |
| Intoxication frequency | $\chi^2=29.7^{***}$ | | | $\chi^2=18.8^{***}$ | | | $\chi^2=43.2^{***}$ | | |
| - never | 5 (18.5) | 135 (63.1) | | 12 (41.4) | 121 (68.4) | | 17 (30.4) | 256 (65.5) | |
| - 1–10 times | 12 (44.4) | 62 (29.0) | | 12 (41.4) | 121 (68.4) | | 20 (35.7) | 106 (27.1) | |
| - 11–25 times | 9 (33.3) | 13 (6.1) | | 6 (20.7) | 10 (5.6) | | 15 (26.8) | 23 (5.9) | |
| > 25 times | 1 (3.7) | 4 (1.9) | | 3 (10.3) | 2 (1.1) | | 4 (7.1) | 6 (1.5) | |
| Sniffing | 7(25.9) | 20 (9.3) | 6.6* | 6 (20.7) | 5 (2.8) | 15.7*** | 13 (23.2) | 25 (6.4) | 17.8*** |
| Cannabis use | 4 (14.8) | 3 (1.4) | 15.3** | 1 (3.4) | 1 (0.6) | 2.1 | 5 (8.9) | 4 (1.0) | 15.5 ** |

*p<.05
**p<.01
***p<.001

In both ethnic groups, self-reported suicidal thoughts were associated with low thriving at school, daily smoking, having ever been drunk, a higher frequency of alcohol intoxication and cannabis use. Also, in both ethnic groups, all the emotional/behavioural problem areas were associated with suicidal thoughts. Family status (living in a step-parent family) and sniffing were only associated with suicidal thoughts among Sami students, as was low academic competency for the Norwegian counterparts (Table II). For parent-reported emotional/behavioural problems, however, an ethnic group difference occurred showing that Norwegian parents reported more emotional/

behavioural problems for their children than did the Sami parents. For the Norwegian students, all parent-reported narrow band scales on the CBCL were significantly associated with suicidal thoughts, while for the Sami students, "somatic complaints" occurred as the only significant one (Table IV).

The association between self-reported suicidal behaviour and ethnocultural factors was significant only for ethnic identification and ethnic context. Among Sami adolescents, higher rates of both self-mutilation/suicide attempts and suicidal thoughts were found among subjects who did not identify with their ethnic group compared with those who

Table II. Suicidal thoughts and sociodemographic and psychosocial characteristics in Sami and Norwegian adolescents.

| | Sami adolescents | | χ^2 / F | Norwegian adolescents | | χ^2 / F | Total | | χ^2 / F |
|------------------------|---------------------------------|----------------------|--------------|---------------------------------|----------------------|--------------|---------------------------------|----------------------|--------------|
| | Self-reported suicidal thoughts | | | Self-reported suicidal thoughts | | | Self-reported suicidal thoughts | | |
| | Yes n=39 n (%) | No n=214 n (%) | | Yes n=29 n (%) | No n=177 n (%) | | Yes n=56 n (%) | No n=391 n (%) | |
| Family status | | | 13.2** | | | .29 | | | 9.9* |
| - Intact family | 23 (14.0) | 141 (86.0) | | 19 (13.8) | 119 (86.2) | | 42 (63.6) | 260 (68.2) | |
| - Single-parent family | 4 (10.8) | 33 (89.2) | | 5 (12.2) | 36 (87.8) | | 9 (13.6) | 69 (18.1) | |
| - Step-parent family | 9 (25.0) | 27 (75.0) | | 3 (11.5) | 23 (88.5) | | 12 (18.2) | 50 (13.1) | |
| - Outside family | 3 (7.5) | 1 (2.5) | | 0 | 1 (100) | | 3 (4.5) | 2 (0.5) | |
| Academic competence | 1.96 (0.5) | 2.0 (0.5) | 0.4 | 1.8 (0.4) | 2.2 (0.5) | 3.6 *** | 1.9 (0.5) | 2.1 (0.5) | 2.7** |
| Thriving at school | 2.9 (0.6) | 3.1 (0.5) | 2.5* | 3.0 (0.5) | 3.3 (0.4) | 4.1** | 2.9 (0.5) | 3.2 (0.5) | 4.0*** |
| Smoking | 15 (31.2) | 33 (68.8) | 10.0** | 12 (50) | 12 (50) | 31.8*** | 27 (40.9) | 45 (11.9) | 34.8*** |
| Alcohol debut | 26 (25.7) | 75 (74.3) | 11.7*** | 17 (23.3) | 56 (76.7) | 10.1** | 43 (65.2) | 131 (34.4) | 22.4*** |
| Intoxication frequency | | | 26.0*** | | | 13.1** | | | 38.2*** |
| - never | 13 (9.3) | 127 (90.7) | | 10 (7.5) | 123 (92.5) | | 23 (34.8) | 250 (65.6) | |
| - 1–10 times | 13 (17.6) | 61 (82.4) | | 10 (19.2) | 42 (80.8) | | 23 (34.8) | 103 (27.0) | |
| - 11–25 times | 10 (45.5) | 12 (54.5) | | 5 (31.2) | 11 (68.8) | | 15 (22.7) | 23 (6.0) | |
| > 25 times | 3 (60.0) | 2 (40.0) | | 2 (40.0) | 3 (60.0) | | 5 (7.6) | 5 (1.3) | |
| Sniffing | 4 (10.3) | 3 (1.5) | 8.9* | 1 (3.7) | 1 (0.6) | 2.4 | 5 (7.6) | 4 (1.0) | 12.1** |
| Cannabis use | 9 (23.1) | 18 (8.9) | 6.6* | 5 (18.5) | 6 (3.4) | 10.7** | 14 (21.2) | 24 (6.3) | 16.1*** |

*p<.05
**p<.01
***p<.001

did. A total of 11.8% (18) of Sami subjects identifying with their ethnic group reported suicidal thoughts versus 23.6% (21) among those who did not ($\chi^2[1,241]=4.5, p=.03$). For self-mutilation or suicide attempts, the prevalence was 7.9% (12) for adolescents identifying as Sami versus 16.9% (15) for those who did not perceive themselves as Sami, respectively ($\chi^2[1, 241]=4.5, p=.03$). Sami adolescents being perceived as Sami by friends, neighbours etc reported less self-mutilation or suicide attempts than Sami peers being perceived as Norwegian (5.9% versus 15%; $\chi^2[1,241]=4.8, p=.004$).

The only ethnocultural factor that influenced

suicidal behaviour in Norwegian adolescents was ethnic context ($\chi^2[1,206]=10.3, p=.006$). Of Norwegian students living in a Sami-dominated area, 40% (6) reported suicidal thoughts versus 11% (21) in a Norwegian-dominated area. Ethnic language competency was not significant for any suicidal behaviour in either ethnic group.

Multivariate stepwise logistic regression analyses were run separately for each ethnic group for groups of variables that had a significant occurrence in the univariate analyses when adjusted for gender. In both ethnic groups, the effect of gender disappeared when controlling for all other variables.

Table III. Means (SD) of self-reported emotional/behaviour problems (YSR) in Sami and Norwegian adolescents with and without self-reported self-mutilation/suicide attempts and suicidal thoughts.

| Self-reported measures of emotional problems and behaviour | Sami adolescents | | | | | | | |
|--|--|-----------|------|-------|---------------------------------|-----------|------|-------|
| | Self-reported self-mutilation/suicide attempts | | | | Self-reported suicidal thoughts | | | |
| | Yes n=27 | No n=214 | F | p | Yes n=39 | No n=202 | F | p |
| Withdrawn | 5.9 (4.3) | 4.1 (2.0) | 4.3 | <.001 | 5.8 (2.3) | 4.0 (2.0) | 5.1 | <.001 |
| Somatic Complaints | 5.7 (4.3) | 2.6 (2.5) | 5.4 | <.001 | 5.6 (3.7) | 2.4 (2.5) | 6.8 | <.001 |
| Anxious/Depressed | 13.9 (6.1) | 5.5 (4.2) | 9.3 | <.001 | 12.8 (5.7) | 5.2 (4.0) | 10.1 | <.001 |
| Social Problems | 3.5 (2.7) | 2.9 (2.0) | 1.3 | .185 | 3.7 (2.2) | 2.9 (1.9) | 2.3 | .024 |
| Thought Problems | 4.5 (2.8) | 1.9 (2.1) | 5.7 | <.001 | 4.1 (2.7) | 1.9 (2.1) | 6.0 | <.001 |
| Attention Problems | 7.6 (2.6) | 4.8 (2.8) | 5.0 | <.001 | 7.2 (2.9) | 3.9 (2.7) | 5.4 | <.001 |
| Delinquent Behaviour | 8.4 (4.9) | 4.1 (2.8) | 6.8 | <.001 | 14.6 (5.9) | 8.1 (4.6) | 6.9 | <.001 |
| Aggressive Behaviour | 15.2 (6.0) | 8.4 (4.8) | 6.7 | <.001 | 5.8 (2.8) | 2.2 (2.2) | 7.7 | <.001 |
| Self-reported measures of emotional problems and behaviour | Norwegian adolescents | | | | | | | |
| | Self-reported self-mutilation/suicide attempts | | | | Self-reported suicidal thoughts | | | |
| | Yes n=29 | No n=177 | F | p | Yes n=27 | No n=179 | F | p |
| Withdrawn | 6.0 (3.0) | 3.6 (2.1) | 5.5 | <.001 | 6.2 (3.0) | 3.6 (2.1) | 5.6 | <.001 |
| Somatic Complaints | 5.8 (3.6) | 2.5 (2.3) | 6.3 | <.001 | 5.6 (3.4) | 2.6 (2.6) | 5.4 | <.001 |
| Anxious/Depressed | 12.9 (6.0) | 4.8 (3.6) | 10.1 | <.001 | 13.7 (5.6) | 4.8 (3.5) | 11.4 | <.001 |
| Social Problems | 3.3 (2.2) | 2.3 (1.9) | 2.8 | .006 | 3.6 (2.1) | 2.2 (1.9) | 3.3 | .001 |
| Thought Problems | 3.0 (2.5) | 2.0 (1.8) | 3.6 | <.001 | 3.2 (2.3) | 1.6 (1.8) | 4.2 | <.001 |
| Attention Problems | 6.8 (2.7) | 4.3 (2.7) | 4.8 | <.001 | 7.0 (2.8) | 4.3 (2.6) | 5.1 | <.001 |
| Delinquent Behaviour | 3.4 (2.2) | 5.6 (2.5) | 5.1 | <.001 | 6.0 (2.4) | 3.3 (2.1) | 6.2 | <.001 |
| Aggressive Behaviour | 12.0 (5.6) | 7.8 (4.4) | 4.5 | <.001 | 12.2 (4.8) | 7.8 (4.6) | 4.5 | <.001 |

Anxiety/depression was significantly correlated to self-mutilation or suicide attempts and suicidal thoughts in both ethnic groups. Among the Sami, this factor was only significant for suicidal thoughts while self-mutilation or suicide attempts additionally were correlated to self-reported delinquency and parent-reported withdrawal. Among Norwegian adolescents, self-mutilation or suicide

attempts were also correlated to living in a single-parent or a step-parent family and to a higher frequency of intoxication. For suicidal thoughts, daily smoking and having thought disorders also influenced suicidal thoughts in addition to anxiety and depression symptoms. None of the ethnocultural variables remained significant in the multivariate analyses when adjusted for all other variables.

Table IV. Means(SD) of parent-reported emotional/behavioural problems (CBCL) in Sami and Norwegian adolescents with and without self-reported self-mutilation/suicide attempts and suicidal thoughts.

| Parent-reported measures of emotional problems and behaviour | Sami adolescents | | | | | | | |
|--|--|-----------|------|------|---------------------------------|------------|-----|------|
| | Self-reported self-mutilation/suicide attempts | | | | Self-reported suicidal thoughts | | | |
| | Yes n=15 | No n=81 | F | p | Yes n=20 | No n=76 | F | p |
| Withdrawn | 3.6 (5.1) | 2.7 (3.7) | 0.7 | .047 | 3.7 (4.3) | 2.7 (3.9) | .1 | .354 |
| Somatic Complaints | 2.8 (3.8) | 1.0 (1.3) | 3.4 | .001 | 2.5 (3.4) | 1.0 (1.3) | 3.1 | .002 |
| Anxious/Depressed | 2.3 (3.0) | 1.9 (2.7) | .46 | .645 | 2.7 (3.4) | 1.8 (2.8) | 1.2 | .216 |
| Social Problems | 3.0 (4.0) | 2.1 (2.8) | .10 | .331 | 3.3 (3.8) | 2.1 (2.8) | 1.6 | .114 |
| Thought Problems | 3.2 (3.2) | 1.9 (2.4) | 1.18 | .073 | 2.8 (3.1) | 1.9 (2.4) | 1.3 | .117 |
| Attention Problems | 5.0 (5.6) | 2.4 (3.6) | 2.4 | .023 | 4.3 (5.1) | 2.4 (3.8) | 1.9 | .065 |
| Delinquent Behaviour | 6.4 (7.3) | 2.9 (5.0) | 2.3 | .029 | 5.4 (6.6) | 53.1 (5.2) | 1.7 | .102 |
| Aggressive Behaviour | 2.7 (4.5) | 2.8 (4.6) | .02 | .982 | 3.7 (4.8) | 2.5 (4.5) | 1.0 | .300 |

| Parent-reported measures of emotional problems and behaviour | Norwegian adolescents | | | | | | | |
|--|--|-----------|------|--------|---------------------------------|-----------|------|-------|
| | Self-reported self-mutilation/suicide attempts | | | | Self-reported suicidal thoughts | | | |
| | Yes n=17 | No n=100 | F | p | Yes n=17 | No n=100 | F | p |
| Withdrawn | 3.2 (3.3) | 1.9 (2.5) | 5.4 | < .001 | 2.7 (3.3) | 2.0 (2.5) | 5.6 | <.001 |
| Somatic Complaints | 1.1 (1.3) | 0.8 (1.2) | .08 | .411 | 1.2 (1.5) | 0.8 (1.2) | 5.5 | <.001 |
| Anxious/Depressed | 1.8 (2.5) | 1.3 (1.8) | 1.02 | .308 | 1.4 (2.6) | 1.3 (1.7) | 11.4 | <.001 |
| Social Problems | 2.1 (2.1) | 1.6 (2.3) | .87 | .382 | 3.0 (2.8) | 1.5 (2.1) | 3.3 | .001 |
| Thought Problems | 2.3 (2.6) | 1.3 (1.6) | 1.4 | .159 | 1.7 (2.4) | 1.4 (1.7) | 4.2 | <.001 |
| Attention Problems | 2.8 (3.5) | 1.6 (2.3) | 1.9 | .060 | 3.4 (3.6) | 1.5 (2.2) | 5.1 | <.001 |
| Delinquent Behaviour | 5.2 (6.6) | 2.4 (3.8) | 2.5 | .012 | 4.8 (6.6) | 2.4 (3.9) | 6.2 | <.001 |
| Aggressive Behaviour | 2.1 (5.6) | 1.7 (3.3) | .42 | .674 | 2.5 (5.9) | 1.6 (2.6) | 4.5 | <.001 |

DISCUSSION

In this study, self-mutilation or suicidal attempts within the last 6 months were reported by 12.5% of Sami and Norwegian adolescents aged 13–16 years. Furthermore, 14.8% self-reported suicidal thoughts. A lack of agreement between reports made by the adolescents and reports made by the parents occurred as the prevalence rate obtained by the parents was considerably lower than those obtained by the adolescents, 0.5% for self-mutilation or suicide attempts and 2.4% for suicidal thoughts, respectively. These findings may indicate that parents are not aware of self-mutilation or suicidal behaviour in their children. This is also shown in previous research using the same measures of self-mutilation and suicidal behaviour (20,33). In our study however, the rates of self-reported self-mutilation and suicidal behaviour are far above those revealed in these studies. Only parent-reported ratings demonstrated rates that were approximately similar to other studies (20,33).

This study examined self-mutilation and suicidal behaviour in Indigenous Sami and majority Norwegian adolescents in the 1990s (27), nearly contemporary to a cluster of suicides among young Sami in the Sami-dominated context of the study area. In contrast to several studies on suicidal behaviour among Indigenous adolescents, this study revealed that the prevalence of self-mutilation or suicide attempts and suicidal thoughts in young Sami adolescents did not exceed those of the ethnic majority. However, the overall rate of self-mutilation and suicidal behaviour was higher than elsewhere in Norway (34), following a similar pattern of completed suicides. Still, compared with other Indigenous adolescent groups, the rate of self-mutilation and suicidal behaviour is in the lower range.

In contrast to the experience of the cluster of suicides among young Sami males in the Sami highland that had taken place just before this study, our results did not show higher rates of suicidal thoughts among Sami adolescents compared with their Norwegian peers. In the univariate analyses, Norwegian students in the Sami-dominated highland were at higher risk, possibly indicating that independent of other risk factors, belonging to a Norwegian minority in the Sami-dominated highland represents a strain on these youngsters. This finding supports earlier findings reported from this study (30) of more emotional and behavioural problems in Norwegian adolescents in the Sami highland. The lower rate of suicidal thoughts among Sami adolescents can also be explained by the younger age of our sample compared with those who died in the cluster of suicides. In early adolescence, serious mental health problems are less frequent than in late adolescence and young adulthood, which can possibly explain the difference.

For Sami adolescents, a stronger Sami identity in univariate analyses was correlated with more suicidal behaviour. A previous study of Sami older adolescents showed that a strong ethnic identity was associated with more emotional and behavioural problems (32). However, our findings showed that when controlled for other risk factors, such as mental health problems, ethno-cultural conditions were subordinated.

As found in several other studies, univariate analyses indicated higher rates of self-mutilation or suicide attempts and suicidal ideation in females than in their male counterparts (8,35). However, in the multivariate analyses, the gender difference became non-significant. In a study of Norwegian adolescents, Wichstrom (35) found that in suicide attempts, gender differences were reduced when depressive mood

symptoms were controlled for and were no longer significant when eating disorders were included. By contrast, our study supports the importance of depressive mood symptoms as a significant factor for suicidal behaviour and self-mutilation for both Indigenous and Norwegian adolescents.

Among the Sami who self-reported, delinquent problems remained significant for self-mutilation or suicide attempts in the multivariate analyses. This finding did not occur in their Norwegian peers in whom higher intoxication frequency was influencing self-mutilation or suicide attempts. These findings show evidence of an association between self-mutilation or suicidal behaviour and alcohol consumption and between self-mutilation or suicidal behaviour and antisocial behaviour, with emotional problems mixed in as shown in other studies (19,34,36-38,). While the first combination occurred only for Norwegian adolescents, the latter only occurred for Sami adolescents when adjusted for all other factors.

The pattern of correlates differed to some extent between Sami and Norwegian adolescents. In independent analyses, Norwegian parents reported more problems associated with suicidal thoughts than Sami parents did. When controlling for gender and all other significant variables in the multivariate analyses, these differences disappeared. In Sami adolescents' self-reported delinquency and in parent-reported withdrawals, there were group-specific risk factors for self-mutilation or suicide attempts. Among Norwegian peers, living in a step-parent or single-parent family and having a high rate of frequent intoxication were group-specific correlates for self-mutilation or suicide attempts. The only ethnic difference for suicidal thoughts were the self-reported thought problems and

daily smoking in Norwegian adolescents. In the multivariate analyses, having anxiety/depression problems was the strong factor highly associated with self-mutilation and suicidal behaviour in both ethnic groups and reported both by parents and the adolescents themselves.

Sociodemographic factors, except for adverse family patterns in Norwegian adolescents, did not influence suicidal behaviour or self-mutilation. However, emotional problems and suicide attempts have been shown to occur more frequently in adolescents from broken homes (39).

Limitations and strengths

There are several limitations in this study. First, several risk factors known to enhance the risk for self-mutilation and/or suicide attempts among Indigenous adolescents were not examined such as the exposure to suicide attempts and completed suicides among friends and family, alienation from family and community, sexual and physical abuse, and eating disorders.

Also, the cross-sectional design of this study creates certain limitations. Longitudinal research is needed to detect causal relations in the formation and maintenance of suicide attempts, and to identify factors that constitute high risk prior to the suicide attempts or which are sequelae after the attempts. The study did not measure the severity of the self-inflicted injury or the suicide attempt. Minor injuries may represent an important part of the numbers reported here. The under-reporting of suicide attempts may also represent a source of error in the numbers who attempted suicide.

Since this study was conducted in the compulsory school system, drop-outs among high-risk adolescents were avoided. The low response rate could have raised a problem of external validity,

particularly for the parent-reported items. But in comparing schools with a response rate below and above 80%, no significant discrepancy in the rate of suicide attempts was found.

There was considerable disagreement between parent- and self-reports in the prevalence rate of self-mutilation or suicidal behaviour. Particularly, the high rate of self-reported self-mutilation or suicidal behaviour reported by the adolescents raises the concern of the validity of the results. Younger adolescents may view self-mutilation or suicidal behaviour in a broader sense than adults because of their developmental level and life experience. On the other hand, parents may not be adequately aware of their children's emotional states. Researchers have claimed that the adolescent's perception of him-/herself, rather than the perception by the parents, is a better indicator of psychopathology in this age range (33). Also, the suboptimal internal consistency of CBCL and YSR subscales raises concern about how one interprets the impact of parent-reported delinquency, social problems and thought problems on Norwegian adolescents as well as parent-reported thought problems on both ethnic groups. The effect of self-reported withdrawal, thought problems and social problems on self-mutilation or suicidal behaviour may also be influenced by low internal consistency, and these results must therefore be interpreted with caution.

This study represents the first survey that investigated suicide attempts in relation to ethnocultural conditions among young Sami. The causes of suicidal behaviour are complex and appear to vary between Indigenous groups as well as between age and gender groups. This variety challenges our understanding of the role that ethnocultural factors play and should foster

more interest in this area. Further research should endeavour to combine cultural characteristics with the common risk factors that are known about suicidal behaviour.

Future strategies that can help to prevent self-mutilation or suicidal behaviour should focus on those identified risk factors that can be modified. In order for clinicians and the public health service to reduce suicides and suicidal behaviour rates, there has to be an increased focus on those factors with the highest attributable risk. In the case of adolescents in the arctic regions of Norway, self-reported depressive symptoms are the most significant correlates for self-mutilation and suicidal behaviour and should therefore be a primary focus of adolescents' mental health.

REFERENCES

1. Beautrais AL. Child and young adolescent suicide in New Zealand. *Aust N Z J Psychiatry* 2001;35:647-653.
2. Bjerregaard P. Rapid socio-cultural change and health in the Arctic. *Int J Circumpolar Health* 2001;60:102-111.
3. Cantor C. The epidemiology of suicide and attempted suicide among young Australians. *Aust N Z J Psychiatry* 2000;34:370-387.
4. Clarke VA. Understanding suicide among Indigenous adolescents: a review using the PRECEDE model. *Inj Prev* 1997;3:126-134.
5. Grossman DC. Risk factors for suicide attempts among Navajo adolescents. *Am J Public Health* 1991;81:870-874.
6. Hunter E, Harvey D. Indigenous suicide in Australia, New Zealand, Canada, and the United States. *Emerg Med (Fremantle)* 2002;14:14-23.
7. Kirmayer LJ. Suicide among Canadian Aboriginal peoples. *Transcult Psychiatry Research review* 1994;31(1):3-58.
8. Leenars AA. Suicide among Indigenous peoples: introduction and call to action. *Arch Suicide Res* 2006;10:103-115.
9. Lester David. Native American suicide rates, acculturation stress and traditional integration. *Psychol Rep* 1999;84:398.
10. Bjerregaard P, Lyngø I. Suicide – a challenge in modern Greenland. *Arch Suicide Res* 2006;10:209-220.

11. Borowsky IW. Suicide attempts among American Indian and Alaska Native youth: risk and protective factors. *Arch Pediatr Adolesc Med* 1999;153:573-580.
12. Kirmayer LJ, Malus M, Boothroyd LJ. Suicide attempts among Inuit youth: a community survey of prevalence and risk factors. *Acta Psychiatr Scand* 1996;94:8-17.
13. Leineweber M, Bjerregaard P, Baerveldt C, Voestermans P. Suicide in a society in transition. *Int J Circumpolar Health* 2001;60:280-287.
14. Sigurdson E. A five year review of youth suicide in Manitoba. *Can J Psychiatry* 1994;39:397-403.
15. Thorslund J. Suicide among Inuit youth in Greenland 1977-86. *Arctic Med Res* 1991;Suppl:299-302.
16. Chandler MJ, Lalonde CE, Sokol BW, Hallett D. Personal persistence, identity development, and suicide: a study of Native and Non-native North American adolescents. *Monogr Soc Res Child Dev* 2003;68(vii-viii):1-130.
17. Steele MM, Doey T. Suicidal behaviour in children and adolescents, part I: etiology and risk factors. *Can J Psychiatry* 2007;52:21S-35S.
18. Chandler M, Proulx T. Changing selves in changing worlds: youth suicide on the fault-lines of colliding cultures. *Archives of Suicide Research* 2006;10(2):125-140.
19. Silvikén A, Haldorsen T, Kvernmo S. Suicide among Indigenous Sami in the Arctic Norway, 1970-1998. *Eur J Epidemiol* 2006;21:707-713.
20. Resch F, Parzer P, Brunner R. Self-mutilation and suicidal behaviour in children and adolescents: prevalence and psychosocial correlates: results of the BELLA study. *Eur Child Adolesc Psychiatry (suppl 1)* 2008;17: 92-98.
21. Brunner R, Parzer P, Haffner J, Steen R, Ross J, Klett M, et al. Prevalence and psychological correlates of occasional and repetitive deliberate self-harm in adolescents. *Arch Pediatr Adolesc Med* 2007;161:641-649.
22. Hawton K, Arensman E, Wasserman D, Hulstén A, Bille-Brahe U, Bjerke T, et al. Relation between suicide and suicide rates among young people in Europe. *J Epidemiol Community Health* 1998;52:191-194.
23. Kirmayer LJ, Brass GM, Tait CL. The mental health of Aboriginal Peoples: Transformations of identity and community. *Can J Psychiatry* 2000;45:607-616.
24. Lee CS, Chang JC, Cheng ATA. Acculturation and suicide: a case-control psychological autopsy study. *Psychol Med* 2002;32:133-141.
25. Chandler M, Lalonde C. Cultural continuity as a hedge against suicide in Canada's First Nations. *Transcult Psychiatry* 1998;35:191-219.
26. Silvikén A, Kvernmo S. Suicide attempts among Indigenous Sami adolescents and majority peers in Arctic Norway: prevalence and associated risk factors. *J Adolesc* 2007;30(4):613-26.
27. Hildal G. Suicide among Sami youth. Report of Child and Adolescent Psychiatric Outpatient Clinic- Karasjok. 1987. Available from SANKS, Postbox 4, N-9730 Karasjok, Norway.
28. Achenbach TM. Manual for the Child Behaviour Checklist/4-18 and 1991 Profile. Burlington: University of Vermont, Department of Psychiatry; 1991.
29. Achenbach TM. Manual for the Youth Self Report and 1991 Profile. Burlington: University of Vermont, Department of Psychiatry; 1991.
30. Kvernmo S, Heyerdahl S. Influence of ethnic factors on behaviour problems in Indigenous Sami and majority Norwegian adolescents. *J Am Acad Child Adolesc Psychiatry* 1998;37:743-751.
31. Kvernmo S, Heyerdahl S. Ethnic identity in aboriginal Sami adolescents: the impact of the family and the ethnic community context. *J Adolesc* 1996;19:453-463.
32. Kvernmo S, Heyerdahl S. Acculturation strategies and ethnic identity as predictors of behavioural/emotional problems in arctic minority adolescents. *J Am Acad Child Adolesc Psychiatry* 2003;37:743-751.
33. Steinhausen HC, Bosiger R, Metzke CW. Stability, correlates, and outcome of adolescent suicidal risk. *J Child Psychol Psychiatry* 2006;47:713-722.
34. Wichstrøm L. Predictors of adolescent suicide attempts: a nationally representative longitudinal study of Norwegian adolescents. *J Am Acad Child Adolesc Psychiatry* 2000;39:603-610.
35. Wichstrøm L. Explaining the gender difference in self-reported suicide attempts: a nationally representative study of Norwegian adolescents. *Suicide Life Threat Behav* 2002;32:101-116.
36. Borowsky IW. Adolescent suicide attempts: risks and protectors. *Pediatrics* 2001;107:485-493.
37. Borst SR, Noam GG, Bartok JA. Adolescent suicidality: a clinical-developmental approach. *J Am Acad Child Adolesc Psychiatry* 1991;30:796-803.
38. Marttunen MJ, Aro HM, Henriksson MM, Lönnqvist JK. Antisocial behaviour in adolescent suicide. *Acta Psychiatr Scand* 1994;89:167-173.
39. Garnefski N, Diekstra RF. Adolescents from one parent, step-parent and intact families: emotional problems and suicide attempts. *J Adolesc* 1997;20:201-208.

Siv Kvernmo, MD

Department of Child and Adolescent Psychiatry

University Hospital of North Norway/

Regional Centre of Child and Adolescent Mental Health, Region North

Institute of Clinical Medicine

Faculty of Health Sciences

N-9037 University of Tromsø

NORWAY

Email: siv.kvernmo@ism.uit.no