

# Victimisation and PTSD in a Greenlandic youth sample

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**Background.** Despite a growing number of studies and reports indicating a very high and increasing prevalence of trauma exposure in Greenlandic adolescents, the knowledge on this subject is still very limited. The purpose of the present study was twofold: To estimate the lifetime prevalence of potentially traumatic events (PTEs) and post-traumatic stress disorder (PTSD) and to examine the relationship between PTEs, estimated PTSD, and sociodemographic variables.

**Methods.** In a Greenlandic sample from 4 different schools in 2 different minor towns in Northern Greenland, 269 students, aged 12–18 ( $M = 15.4$ ;  $SD = 1.84$ ) were assessed for their level of exposure to 20 PTEs along with the psychological impact of these events.

**Results.** Of the Greenlandic students, 86% had been directly exposed to at least 1 PTE and 74.3% had been indirectly exposed to at least 1 PTE. The mean number of directly experienced PTEs was 2.8 and the mean number of indirectly experienced PTEs was 3.9. The most frequent direct events recorded were death of someone close, near drowning, threat of assault/beating, humiliation or persecution by others and attempted suicide. The estimated lifetime prevalence of PTSD was 17.1%, whereas another 14.2% reached a subclinical level of PTSD (missing the full diagnosis by 1 symptom). Education level of the father, and being exposed to multiple direct and indirect PTEs were significantly associated with an increase in PTSD symptoms.

**Conclusion.** The findings indicate substantial mental health problems in Greenlandic adolescents and that these are associated with various types of PTEs. Furthermore, the findings indicate that Greenlandic adolescents are more exposed to certain specific PTEs than adolescents in similar studies from other nations. The present study revealed that Greenlandic girls are particularly vulnerable towards experiencing PTEs. Indeed, in general, girls reported more experiences of direct and indirect PTEs. Furthermore, girls reported being more commonly exposed to specific types of PTEs compared to boys.

Keywords: *post-traumatic stress disorder; adolescence; traumatic exposure; cross-cultural research; Greenland*

Received: 20 March 2012; Revised: 8 June 2012; Accepted: 31 July 2012; Published: 24 August 2012

Research indicates that children and adolescents are particularly vulnerable to experiences of potentially traumatising events (PTEs). Indeed, it has been documented that the risk of experiencing traumatic events is highest in adolescence (1). Furthermore, this group is reported as being particularly vulnerable to the development of post-traumatic stress disorder (PTSD) after the experience of traumatic events (2,3). Exposure to trauma and negative life events in these formative years has the potential to affect maturation and personality features. Further to this, PTEs may result in various self-injurious and suicidal behaviours, depression or other psychiatric illnesses (4). With the currently increasing ethnic diversity of populations worldwide,

it is of particular interest to investigate the prevalence of trauma exposure and PTSD in children and adolescents from varying cultures. In addition, when designing preventive interventions and treatment programmes for youths suffering from PTSD, it is crucial that researchers and practitioners alike understand the complex interaction of variables behind the disorder. Differences in the prevalence of exposure, prevalence of PTSD and demographic variables between ethnicities may reveal some important clues to the aetiology of the disease.

## Historical background, Greenland

Greenland is a former Danish colony now governed by Home Rule Government. Greenland is the world's largest

island and has approximately 55,000 inhabitants. The majority of whom live along the coastline, in 76 small towns and villages. Most of these towns and villages are isolated from one another in terms of contact and transportation. Before the 1950s Greenland was a closed country with little external cultural influence. Indeed, entry into the country was only permitted by first applying for and being awarded a permit from the Danish government. However, since the 1950s Greenland has experienced a period of rapid development. A transition from subsistence hunting and fishing to an economy based on wage earning has brought profound changes in infrastructure and housing, generally brought about with the Inuit as spectators. Non-Inuit people have poured into the country and have filled many of the well-paid jobs and influential positions available. In addition, the transition has brought about increased contact with the rest of the world and increased availability of goods which were typically hard to acquire, for example, tobacco and alcohol. Changes such as these have seemingly created some problems for the Inuit population (5,6).

### Greenlandic adolescents and negative life experiences

Greenland is universally recognised primarily for its beauty, warm hospitality and exciting adventures. In recent years, there has been an increased focus on the Greenlandic people's social problems. Particular focus has been placed on increasing rates of suicide and the high prevalence of alcohol abuse, sexual abuse and violence (in and out of home) (5–8). Young Greenlandic people appear to be particularly vulnerable in this context.

In a study on violence, sexual abuse and health in Greenland, a very high prevalence of violence-related experiences were reported (6). It was found that younger women (18–24 years) reported a greater number of violent and sexual abuse/sexual assault experiences compared to older age groups. Of the younger women, 58.8% reported experiences of violence in their lifetime and 21.1% reported violence within the last year. The frequency of violence among younger males (18–24 years) was also found to be very high compared to older age groups. Of the younger males, 44% had experiences of lifetime violence and 23% reported experiences within the last year. With regard to the prevalence of sexual abuse, the same pattern was evident; the younger age group showed a higher prevalence of sexual abuse/sexual assault (women = 33.9%, men = 10.0%) and childhood sexual abuse (women = 12.5%, men = 3.8%) compared to older age groups. In a large, nationally representative survey of Greenlandic students between the age of 15 and 17, a similar prevalence of sexual abuse was found (7). Indeed, it was concluded that around 9% of Greenlandic boys and 28% of Greenlandic girls had been exposed to sexual

abuse. Not only was the reported prevalence of violence and sexual abuse very high, the increased rate indicated that experiences of violence and sexual abuse were more frequent among Greenlandic adolescents than previously reported.

Another pertinent finding within the extant literature is that since the 1950s the suicide rate has increased dramatically in Greenland and other Inuit communities. Indeed the rate of suicide in Greenland is among the highest in the world (8). A Greenlandic study on suicidal behaviour concluded that suicides and suicide attempts peak at 15–24 of age in Greenland (8). In the nationally representative survey mentioned previously, it was found that as many as 37% (52% girls, 20% boys) had seriously considered taking their own life, whereas 23% (33% girls, 11% boys) had actively tried to take their own life (7). Three quarters (74.9% of the boys and 76.9% of the girls) reported that they knew someone who had committed suicide. Also, 62% reported experiences of alcohol abuse in their close or extended family (7). Combined with the above-mentioned high rates of both sexual abuse and suicide a recent study, regarding national indicators of child health and well-being, reported that between 3.7 and 10.5% of all Greenlandic schoolchildren have lived in long-lasting poverty (5).

### Results from similar studies

Studies based on adolescents and adults have shown differences in the prevalence of PTSD in various countries (9,10). This may be attributable to cultural differences. The variations may, however, also be associated with methodological differences. This is why cross-national studies applying the same methodology are strong assets. The current study was designed to provide epidemiological information about exposure to PTEs together with the prevalence of estimated PTSD in a Greenlandic youth sample. This study is novel as such has never been conducted in Greenland. The study replicates 7 similar epidemiological studies of adolescents from 7 different countries: Denmark, Iceland, Israel, Lithuania, The Faroe Islands, India and Kenya (11–17). We applied the same research design and measures, as in the other 7 countries, to strengthen the potential of examining cultural differences across nations.

Judging from previous studies, the Greenlandic prevalence of suicidal attempts and sexual abuse seems to be much higher than the prevalence among adolescents from most other nations (7,8). Compared to other European studies (11,12,14), the Greenlandic prevalence of violent experiences also appears to be very high. Thus, looking at previous studies (which are sparse), Greenlandic adolescents may be particularly vulnerable towards exposure of certain PTEs. Previous studies suggest that Greenlandic children and adolescents have an increased prevalence of exposure to certain adverse life events such as suicide

attempts, sexual abuse and violent attacks than adult Greenlandic people. Furthermore, it would also appear that they have an increased prevalence of exposure compared to adolescents from many other countries. Despite the heightened focus on the high prevalence of violence, sexual abuse and suicide among Greenlandic adolescents, research related to young Greenlandic people and their negative life experiences is still very limited (5). Indeed to our knowledge, research has never been conducted in relation to the prevalence of traumatisation in Greenland.

## Aim

The purpose of the study was twofold:

- (a) To estimate the lifetime prevalence of PTEs and PTSD.
- (b) To examine the relationship between PTEs, estimated PTSD and sociodemographic variables.

## Methods

### Subjects

A sample of 269 Greenlandic students was selected from 4 schools; 2 state secondary schools, 1 high school and 1 boarding school. The students were between 12 and 18 years old ( $M = 15.4$ ;  $SD = 1.84$ ). A total of 151 (57%) participants were female and 114 (43%) were male. On average there were 20 students per class.

The schools were located in the Discobay area in north-east Greenland, in the towns of Aasiaat and Qasigiannuit. Sixty-seven students (25%) were from the boarding school in Qasigiannuit, 43 (16%) were from the public school in Qasigiannuit, 54 (20%) were from the high school (GU) in Aasiaat and 105 (39%) were from the public school in Aasiaat. The students who attended the high school were somewhat different from the other adolescents in the study for a number of reasons: first, the teaching language in the Greenlandic high schools is mainly in Danish, which is difficult for many Greenlandic people, especially people from smaller towns and villages where there are less Danish inhabitants. Second, there are only 4 high schools in Greenland and because of enormous distances the students need to move and live in the town where the high school is located. This is often for a 3-year period in which students rarely see their family or friends. Third, the normal academic standard in public schools in Greenland is much lower than the academic standard expected at the high schools. These, among other reasons, result in a drop-out rate of about 25% in each high school class (18). Therefore, the students who do not drop out may generally be stronger in terms of academic skills, coping skills and adaptability. Aasiaat has approximately 3000 inhabitants and is Greenland's 5th largest town whereas Qasigiannuit has about

1100 inhabitants. In both towns, the primary economic activity is fishing. The towns are, as is the case for most of the country, somewhat isolated and in the winter period it is only possible to reach the towns by helicopter or an occasional cargo ship.

Of the participating students 222 (82.5%) provided details of their parents education: of the fathers, 53.6% had 9 years of education or less, 18% had 10–12 years of education, 18% had 13–15 years of education and 10.4% had 16 years of education or more. Of the mothers, 47.5% had 9 years of education or less, 19.7% had 10–12 years of education, 17.1% had 13–15 years of education and 10.4% had 16 years of education or more. A total of 263 (97.8%) students provided details of their living arrangements: 65 (24.7%) lived with both parents, 170 (64.6%) lived with a single parent and 28 (10.6%) had other arrangements, such as living with host families, foster parents, siblings, grandparents or other relatives.

### Procedures

Prior to the study, the questionnaire package had been translated from Danish to Greenlandic by 2 bilingual psychologists. The study was approved by the headmasters of the 4 schools, and the respective teachers of each class were informed about the purpose and objective of the study. In all classrooms, a short power point presentation (15 minutes) was given by the 1st author. The objective of this presentation was to enhance the students' understanding of the purpose of the study and the structure of the questionnaires. In all schools, except the high school, the presentation was translated to Greenlandic by a teacher. The students then filled out the questionnaire package containing questions concerning demographic variables, exposure to traumatic events and psychological responses. The students were free to choose whether they wanted a Greenlandic version or a Danish version. The questionnaires were mainly filled out in the class room. However, some of the students requested to sit alone in the corridor or in other more private places. These requests were granted. The students were informed that their answers were anonymous and that their participation was voluntary. All students in the boarding school in Qasigiannuit, the state school in Qasigiannuit and the state school in Aasiaat chose to participate. In the GU in Aasiaat all the 1st year students were gathered in the main hall for the study introduction and they spread out in their respective classrooms while filling out the questionnaires. Since the respective teachers did not record the non-attending students before they went to the study introduction, it is a possibility that some of the students may have left the school after the presentation. Thus the total response rate for GU Aasiaat is not known. It was requested that students answered as truthfully as possible, despite the

somewhat uncomfortable subject nature. The students spent approximately 1 hour filling out the questionnaires. Due to lingual or cultural differences, the researcher requested that the teachers for each class would assist in providing translations and/or explanations of questions from the students. Indeed, the teachers were very helpful with this. The students were given several local help lines to call if they had the need to talk to someone after filling out the questionnaires. Also they were given contact information of the 1st author in case they needed additional help in any way. None of the students contacted the 1st author.

### Measures

The first part of the questionnaire contained questions about demographic variables such as gender (0 = males, 1 = females), age, living arrangements (living with 1 parent, living with both parents, other arrangements) and parents' education (state school [9 years of education], high school or similar [10–12 years of education], Bachelor's Degree or similar [13–15 years of education], Master's Degree or similar [16+ years of education]). Parent's education was chosen as a rough measure of socio-economic status. More detailed socio-economic information was not queried, given that other studies [e.g. (19)] have shown that adolescents' knowledge of their parents' income and occupational status is not very reliable.

The last part of the questionnaire contained a list of 20 PTEs (see Table I). Students were asked to point out which of these events they had been exposed to, and which they had witnessed or heard about from someone else being exposed to. This list of events was selected on the basis of prior research and clinical experience covering both events that meet the 4th edition of the *Diagnostic and Statistical Manual of Mental Disorders (DSM-IV)* A1 Criterion (19) and also some potentially negative life events such as pregnancy/abortion, divorce, being bullied and the absence of a parent. These negative life events were included because it has been shown that not only experiences that meet Criterion A1, but also other intense negative experiences in the family environment can be associated with traumatic responses in adolescents (4). Psychometric data is not yet available for the PTE items but data from 7 previous similar studies supports that the events included in the 20-item questionnaire are frequently experienced by youths across nations and cultures and that they are potentially traumatising (20).

The students were asked to pick out the event that they regarded as being the most stressful. The Harvard Trauma Questionnaire Part IV (HTQ) (21) was used to estimate the level of present PTSD relating to this event. The HTQ consisted of 31 items, out of which the first 17 correspond to the PTSD-symptoms in the *DSM-IV*.

The items were scored on a 4-point Likert scale (1 = not at all, 4 = extremely). Given that diagnostic interviews were not performed with the participants, they were not fully diagnosed. Thus, PTSD scores or cases in the current study are cases of probable PTSD. The HTQ-IV measures the intensity of 3 symptom groups of PTSD: Intrusion (criteria B), Avoidance (criteria C) and Hyperarousal (criteria D). To meet the diagnostic criteria for PTSD, it is necessary to have at least 1 symptom from the Intrusion symptom cluster, 3 or more symptoms from the Avoidance symptom cluster and 2 or more symptoms from the Hyperarousal symptom cluster. A subclinical level of PTSD is reached if 2 out of 3 symptom clusters are present and if the last criterion is only missed by 1 symptom. The criterion for the Intrusion symptom cluster must, however be met, as only 1 symptom is needed to meet this criterion. Good validity and reliability on the HTQ has been reported cross-culturally (21,22) in very culturally diverse countries. Despite this however, it still appears that certain items may carry different meanings across cultures. For instance, the item referring to “not being able to remember the traumatic experience well”, has been shown to have low item-total correlations cross-culturally (22). The internal consistency of the scale was acceptable with a Cronbach  $\alpha$  values of 0.95 for the total scale and 0.73, 0.81 and 0.80 for the Intrusion, Avoidance and Hyperarousal subscales, respectively.

## Results

### Exposure

A total of 86.6% of the students reported having been directly exposed to at least 1 PTE and 74.3% of the students reported having been indirectly exposed to at least 1 PTE (see Table I). The mean number of directly experienced PTEs was 2.8 events: 0 events = 13.4%, 1 event = 23.4%, 2 events = 17.8%, 3 events = 14.5%, 4 events = 9.7%, 5 events or more = 21.2%. The overall average of indirect exposure was 3.9 events. There were significant gender differences in exposure to direct events: boys ( $M = 2.35$ ,  $SD = 2.02$ ) and girls ( $M = 3.17$ ,  $SD = 2.6$ ;  $t(263) = -2.9$ ,  $p = 0.004$ ) and indirect events: boys ( $M = 3.3$ ,  $SD = 4.0$ ) and girls ( $M = 4.4$ ,  $SD = 4.7$ ;  $t(260) = -2.05$ ,  $p = 0.04$ ). The most frequent direct events recorded were: death of someone close (66.2%), near drowning (22.3%), threat of assault/beating (21.6%), humiliation or persecution by others (19%), attempted suicide (18.6%) and the absence of a parent (17.8%). There were significant differences in the gender distribution of many PTE-items. Girls had, significantly more often than males, been directly exposed to rape, witnessed other people being injured or killed, attempted suicide, experienced sexual abuse and reported the absence of a parent. In addition, girls were significantly more often,

**Table I.** Trauma and Life Events According to Exposure and Gender

Event	Direct exposure (%)			Indirect exposure (%)		
	Males (n = 114)	Females (n = 151)	All (n = 269) <sup>a</sup>	Males (n = 114)	Females (n = 151)	All (n = 269) <sup>b</sup>
1. Traffic accident	2.6	6	4.5	21.1	23.2	22.3
2. Other serious accidents	7.9	6.6	7.1	22.8	21.9	23
3. Physical assault	6.1	9.3	8.2	32.5	37.7	36.1
4. Rape	3.5	13.9	9.3 <sup>(3)</sup>	15.8	26.5	21.9
5. Witnessed other people being injured or killed	0	5.3	3 <sup>(1)</sup>	11.4	14.6	13.4
6. Came close to being injured or killed	9.6	9.9	9.7	13.2	11.3	12.6
7. Threatened to be beaten	17.5	23.8	21.6	14.9	23.8	20.1
8. Near-drowning	28.9	17.2	22.3	10.5	21.2	17.1 <sup>(1)</sup>
9. Attempted suicide	9.6	25.2	18.6 <sup>(4)</sup>	25.4	27.8	27.1
10. Robbery/theft	15.8	13.9	14.5	16.7	20.5	19.3
11. Pregnancy/abortion	2.6	17.9	11.2 <sup>(5)</sup>	27.2	38.4	33.8
12. Serious illness	6.1	4	5.2	22.8	31.1	27.1
13. Death of someone close	64	67.5	66.2	25.4	25.2	25.7
14. Divorce	17.5	17.2	17.5	18.4	26.5	23
15. Sexual abuse	4.4	14.6	10 <sup>(2)</sup>	9.6	23.2	17.8 <sup>(3)</sup>
16. Physical abuse	5.3	8.6	7.4	8.8	16.6	13.8
17. Severe childhood neglect	9.6	7.9	8.6	7.0	17.2	13 <sup>(1)</sup>
18. Humiliation or persecution by others (bullying)	13.2	23.2	19	14.9	17.2	16.7
19. Absence of a parent	10.5	22.5	17.8 <sup>(1)</sup>	7.9	10.6	9.3
20. Other traumas	0	2	1.1	0	1.3	0.7

<sup>a</sup>Three did not state their gender.

<sup>b</sup>p ≤ .05; <sup>(1)</sup>p ≤ .05; <sup>(2)</sup>p ≤ .01; <sup>(3)</sup>p ≤ .005; <sup>(4)</sup>p ≤ .001; <sup>(5)</sup>p ≤ .0005.

indirectly exposed to near drowning, sexual abuse and severe childhood neglect.

### Traumatisation

Of the 211 (78.4%) students who had filled out the HTQ-IV, 17.1% met the criteria for lifetime PTSD (7.9% of the boys and 24.6% of the girls). The difference between the sexes was significant ( $\chi^2 = 9.9$ ;  $df = 1$ ;  $p = 0.002$ ). Moreover, 13.5% of the boys and 15.3% of the girls corresponding to 14.2% of the total sample reached the level of subclinical PTSD, missing the PTSD diagnosis by 1 symptom from either the C or D cluster in based on DSM-IV criteria. However, the difference between the 2 sexes was not significant ( $\chi^2 = 0.13$ ;  $df = 1$ ;  $p = 0.72$ ).

### Demographic variables and PTSD

To examine the predictive validity of the number of traumatic events and demographic variables, a logistic regression analysis with estimated PTSD as the dependent variable, and demographic variables as independent variables, was carried out (see Table II). Data analysis showed that a low education level of the father significantly predicted estimated PTSD (OR = 5.24 [1.39–19.69],  $p < 0.05$ ), as did the number of direct PTEs

(OR = 1.65 [1.31–2.07],  $p < 0.05$ ) and the number of indirect PTEs (OR = 1.15 [1.04–1.28],  $p < 0.05$ ) experienced. In other words, the odds of an estimated PTSD diagnosis increased more than 5 times for adolescents who had a father with a low education level (less than 11 years in school) and around 65% and 15% for each direct and indirect event, respectively. In contrast, gender, age, a low education level of the mother, living in Qasigiannuit (as opposed to living in Aasiaat) and living both parents

**Table II.** Logistic regression analysis of number of PTEs and demographic variables as predictor variables on PTSD outcome

Predictor variables	OR (95% CI)	p
Age	0.93	ns
Female gender	1.49	ns
Living in Qasigiannuit	0.91	ns
Not living with both parents	0.97	ns
Low education of father	5.24	0.1
Low education of mother	0.78	ns
Number of direct events experienced	1.65	0.001
Number of indirect events experienced	1.15	0.01

were not found to predict estimated PTSD. Significantly more fathers from Qasiqianguit than from Aasiaat had a low education level ( $\chi^2 = 13.2$ ;  $df = 1$ ;  $p = 0.00$ ).

## Discussion

### Exposure

Greenlandic Inuit have experienced rapid cultural changes, and absorption into a global economy that has had little regard for their autonomy (5). Cultural discontinuity has been linked to high rates of suicide, sexual abuse and violence in many Inuit communities, with the most profound impact on youth (23,24). The present study revealed that Greenlandic adolescents are exposed to a large number of PTEs. A total of 86.6% of the students had been directly exposed to at least 1 PTE and 74.3% of the students had been indirectly exposed to at least 1 PTE. This is in line with 7 comparison studies, where the prevalence of indirect and direct exposure ranged from 76.5 to 94.8%. Likewise, the average number of directly experienced events was in line with previous studies: The Greenlandic average was 2.8 direct events and 3.9 indirect events per student as compared to averages of 1.9–5.6 direct events and 2.4–7.2 indirect events per student. Thus, the Greenlandic adolescents do not seem to differ from adolescents from other nations in relation to general experiences of PTEs.

It has been suggested that Inuit adolescents may be more exposed to specific types of events, such as suicide attempts, sexual abuse and violent attacks, compared to non-Inuit adolescents (23). The prevalence of attempted suicide in the present study was indeed higher than in all the comparison studies (18.6 vs. 2.4–15.2%; see Table III). The found prevalence, is however, lower than previous findings in Inuit populations (8,24–26). The lower prevalence of attempted suicides among adolescents in the present study, as opposed to other studies of Inuit populations, may be caused by differences in samples, geographical settings and methods, or alternatively, it may indicate an ongoing improvement of conditions for Greenlandic adolescents. The reported prevalence of sexual abuse (full sample 10%; boys 4.4%, girls 14.6%) was much higher than in the comparison studies of non-Inuit populations (1.5–5.2%) with the exception of the Kenyan study, where the prevalence was almost twice as high as the Greenlandic. Also noteworthy, the reported prevalence of physical assault (8.2%) was lower than in the Israeli (30%), the Kenyan (22.5%) and the Faroese (9.7%) studies, but still twice as high as the Danish and Lithuanian prevalence of physical assault (4.4–4.6%). Moreover, the prevalence of witnessing other people getting injured or killed (3%) was found to be lower than in all the comparison studies. This finding may be explained by the very low population density in Greenland. Accidents, murders and violent

crimes are obviously more likely to be witnessed by more people in populations of greater density. Of the Greenlandic students participating in the present study, 66.2% reported that they had been exposed to the death of someone close. This prevalence is very high compared to similar studies from other nations, where the prevalence ranges from 7.1 to 54.1%. Furthermore, the Greenlandic adolescents reported a higher prevalence of exposure to rape, pregnancy/abortion, physical abuse and the absence of a parent compared to the other nations, with the exception of Kenya. Taking the Greenlandic infrastructural conditions into account, it is no surprise that the prevalence of exposure to traffic accidents was very low and that the prevalence of exposure to near drowning was very high compared to other nations. The prevalence of indirectly experienced physical assault was also very high compared to the prevalence found in other nations (see Table IV). Indirect experiences of rape, witnessing other people being injured or killed, near drowning, attempted suicide and sexual abuse were also very high among Greenlandic adolescents compared to the prevalence found in other similar studies, again with the singular exception of the very high prevalence found in Kenya. The above suggests that Greenlandic adolescents are not exposed to more PTEs on average than adolescents from other parts of the world, but that they are indeed more exposed to certain specific PTEs such as attempted suicide, death of someone close, rape, sexual abuse, pregnancy/abortion, physical abuse, near drowning and the absence of a parent to a much higher degree than that of adolescents from most other nations.

In previous studies, gender differences have been found in relation to exposure, with certain specific traumatic events being more likely depending on the individual's gender (21). In the present study, there were significant gender differences in exposure. In general, Greenlandic girls had significantly more direct and indirect PTEs compared to males. Significantly more girls than boys had been directly exposed to rape, witnessing other people getting injured or hurt, attempted suicide, sexual abuse and the absence of a parent. Furthermore, significantly more girls had been indirectly exposed to near drowning, sexual abuse and severe childhood neglect. This suggests a particular vulnerability towards experiencing PTEs in Greenlandic girls.

Based on data from the comparison studies in Iceland, Lithuania, Denmark and The Faroe Islands, it was suggested that girls may be more exposed to in-family related events and self-inflicted events, whereas boys more often appear to be victimised in activities outside of the family (15). However, later comparison studies from India and Kenya did not show this trend. In these studies the boys were exposed to both internal family and external family events to a much higher degree compared to girls. Notably, this was also the case for events that we would

*Table III.* Direct exposure comparison (total samples in %)

Event	Denmark	Iceland	Israel	Lithuania	The Faroe			
					Islands	India	Kenya	Greenland
1. Traffic accident	15.9	27.1	25.5	16.9	16.9	39.2	19	4.5
2. Other serious accidents	11.5	11.1		5.5	11.9	17.0	20.7	7.1
3. Physical assault	4.6	7.8	30	4.4	9.7	7.8	22.5	8.2
4. Rape	1.8	3.3	8.1	1.6	4.2	1.2	9.8	9.3
5. Witnessed other people being injured or killed	9	5.8		3.3	9.7	18.5	38.4	3
6. Came close to being injured or killed	10.5	8.7	44.7	6	12.6	18.2	37.8	9.7
7. Threatened to be beaten	26.9	27.6	24.3	29.7	31.9	10.5	34	21.6
8. Near-drowning	18.7	20.9	21.3	26.4	21.1	8.5	23	22.3
9. Attempted suicide	6.2	10.2	7.5	6.6	10.1	2.4	15.2	18.6
10. Robbery/theft	11.8	18.4	18	19.8	13.8	10.9	33.8	14.5
11. Pregnancy/abortion	1.8	2.5		0	3.1	3.4	13.8	11.2
12. Serious illness	12.6	4.8	16.2	7.7	13.1	27.5	54.9	5.2
13. Death of someone close	51.8	42.7	7.1	24.2	53.3	41.4	54.1	66.2
14. Divorce	19	20.4		11.5	13.2	2.4	29	17.5
15. Sexual abuse	1.5	3.9	4.3	4.4	5.2	2.7	19.8	10
16. Physical abuse	3.6	2.9	4.9	3.8	7.4	6.1	27.8	7.4
17. Severe childhood neglect	3.1	2.9	4.7	1.1	5.1	4.4	25.3	8.6
18. Humiliation or persecution by others (bullying)	22.6	23.3	15	9.8	30.5	11.7	32.2	19
19. Absence of a parent	7.4	5.8		4.4	14.7	8.3	37.4	17.8
20. Other traumas	5.6	8.3	5.9	4.4	7.0	4.6	8.8	1.1

*Table IV.* Indirect exposure comparison (total samples in %)

Event	Denmark	Iceland	Israel	Lithuania	The Faroe			
					Islands	India	Kenya	Greenland
1. Traffic accident	36.4	49	54.3	40.7	50.8	51.8	50.3	22.3
2. Other serious accidents	18.7	33		12.1	30.6	32.1	38.8	23
3. Physical assault	13.6	16		12.6	26.4	10.7	25.5	36.1
4. Rape	4.9	9.2	15.6	3.3	14.3	3.6	30.5	21.9
5. Witnessed other people being injured or killed	11.5	21.8		12.6	14.4	21.4	44.3	13.4
6. Came close to being injured or killed	8.5	12.1	33.2	5.5	12.2	15.1	37.4	12.6
7. Threatened to be beaten	20.3	17	20	17	27.9	12.2	33.8	20.1
8. Near-drowning	9.7	8.3	13.6	15.4	15.9	8.3	28.2	17.1
9. Attempted suicide	13.1	12.1	18.8	9.9	21.8	10.2	33.2	27.1
10. Robbery/theft	17.9	22.3	22.3	17	28.1	24.6	48	19.3
11. Pregnancy/abortion	19.5	9.4		4.4	16	19.2	39.2	33.8
12. Serious illness	35.1	41.7	28.9	21.4	39.8	37.2	53.4	27.1
13. Death of someone close	34.1	40.8	39.5	17	47.3	42.8	52.8	25.7
14. Divorce	25.6	17		12.6	33.4	6.8	39.7	23
15. Sexual abuse	3.8	6.8	6.3	4.4	13.4	3.9	31.7	17.8
16. Physical abuse	7.7	5.3	7.9	8.2	16	7.5	29.4	13.8
17. Severe childhood neglect	5.6	7.8	10.7	6	16.5	10.0	31.9	13
18. Humiliation or persecution by others (bullying)	19.2	15	13.4	9.3	35.4	11.7	34.2	16.7
19. Absence of a parent	10	6.8		3.8	20.8	13.1	36.5	9.3
20. Other traumas	3.6	3.4	3.2	0.5	3.7	0.7	10.4	0.7

naturally expect to happen more frequently to girls, such as rape and sexual abuse. Based on the present study we cannot draw any definite conclusions on this matter but in the light of the varying results from other nations it seems plausible that the Greenlandic female vulnerability towards exposure is related to the specific cultural context. This would be an interesting field of research in the future.

### *Traumatisation*

Of the students who had answered all questions in the HTQ-IV, 17.1% met the criteria for probable PTSD and a further 14.2% reached the level of subclinical PTSD. This is similar to the relatively high prevalence found in Iceland and the Faroe Islands, where 16 and 20% met the criteria for PTSD and 12 and 14% met the criteria for subclinical PTSD. Similar to Greenland, both Iceland and the Faroe islands are relatively isolated Islands with a low population density. They are both former Island colonies with a rough nature and great traditions of fishing and hunting. The 3 nations are thus comparable in many areas. In a review of Canadian Aboriginal mental health, it is stated that there is clear and compelling evidence that the long history of cultural oppression and marginalisation has contributed to the high levels of mental problems found in many Indigenous peoples (27). Thus, along with the similar living conditions and circumstances, the long history of cultural oppression and marginalisation of the Indigenous populations of Greenland, Iceland and the Faroe Islands may explain the similar prevalence rates of PTSD in these 3 countries. In summation, the similar cultural profiles of Iceland, The Faroe Islands and Greenland combined with the similar prevalence of PTSD, supports the already widespread understanding, that there are culturally determined elements in the aetiology of PTSD and therefore culture must be taken into account when trying to understand the disorder (9,10). Furthermore, the existing literature reveals significant limitations in the application of standard psychiatric methods to Inuit youth (28,29). Therefore, to assist with mental health problems within Inuit populations, clinicians are advised to exhibit great caution, be open-minded and to aim for a broad cultural understanding (28,30).

### *Demographic variables and PTSD*

Originally PTSD was conceptualised as a normal response to overwhelming psychic trauma. However, because there is growing evidence of great variations in the prevalence of PTSD following exposure to different kinds of stressors, there is increasing acceptance of the idea that exposure to a trauma may not always be sufficient to fully explain the development of PTSD (31). Indeed, research has shown that it is possible to detect certain demographic variables and ways of life

that may have a strong moderating influence on the development of psychopathology.

A low education level of the father (i.e. less than 11 years) was found to be a significant predictor of PTSD, whereas the education of the mother was not related to PTSD. In most Greenlandic families the father is a full- or part-time fisherman or hunter and if he does not supply the family with enough food this may have severe consequences. Indeed, the possibilities and living conditions for the family may change substantially if the father is educated. In Greenlandic families the role of the mother, in terms of being a provider, is not as crucial. This may partially explain the predictive value of the education of the father as compared to the mother.

Some events are thought to be more likely to produce negative effects than others (32). Research studies have confirmed a dose-response connection between the level of exposure and the subsequent reactions. For example, studies report higher rates of PTSD for directly experienced events as compared to witnessed events (33) and for events experienced at close proximity as compared to those at a distance (34). At the same time, several studies challenge the dose-response model, finding that preincident, peritraumatic and postincident factors contribute more to clinical outcome than specific etiologic events do (35–37). In accordance with the dose-response model, the logistic regression analysis in the present study showed that more experiences of PTEs – both direct and indirect experiences, predicted PTSD. Also in accordance with the dose-response model, the relationship between the number of direct events experienced and PTSD was stronger than the relationship between indirect events experienced and PTSD. In other words, the data indicated that more experiences of PTEs and also more direct experiences of PTEs enhanced the risk of PTSD in the Greenlandic adolescents. An interesting future study could examine whether the subjects who experience more and more direct PTEs have personality features, beliefs and/or coping strategies that are significantly different from the subjects who experience less and indirect PTEs. If so, this could be an alternative explanation of the higher rate of PTSD in these subjects rather than it being a direct dose-response effect.

Meta-analytic studies on gender differences in PTSD across the lifespan have shown that females are roughly twice as likely to be traumatised by a traumatic event compared to males (38,39) and 3 times as likely in younger adults (16–24 years old) (38). In accordance with prior studies, the PTSD prevalence in the current study in girls, was 3 times higher than in boys. No gender difference was present in the prevalence of subclinical PTSD. However, when controlling for other predictor variables in the logistic regression analysis, the relationship between female gender and PTSD was not significant. The girls were more exposed to PTEs and in



addition they were exposed to more intrusive experiences such as rape, sexual abuse and attempted suicide than the boys. Hence, in the present study the degree of exposure seems to explain the higher rate of PTSD in girls, rather than a female vulnerability related to attribution style, neurobiological aspects, or locus of control as commonly proposed in the PTSD literature (40).

Large differences in the prevalence of PTSD were found between the schools, with more than twice as many students from the boarding-school in Qasigianguit meeting the criteria for PTSD than the students from the high school in Aasiaat. It was a strong general tendency, that more students from the town of Qasigianguit met the criteria for PTSD, than the students from the town of Aasiaat. As no significant differences between the 2 towns in the number of direct or indirect exposure were found, this implies that certain other risk factors or protective factors in the respective towns may be at play. It has been suggested that people in smaller towns are more vulnerable towards adverse life events. More Greenlandic village children experience clustered negative demographic and socio-economic conditions compared to children from larger towns (5,41). They are more disadvantaged when it comes to economic conditions, housing standards, educational achievement and bilingualism. They also experience a greater food shortage and are more exposed to sexual abuse (7,41). According to the logistic regression analysis, living in Qasigianguit was not a significant predictor of PTSD. However, a low education level of the father was a highly significant predictor of PTSD. The education level of fathers in Qasigianguit was indeed much lower than in Aasiaat. Possible related variables such as substance abuse, lower parental skills and lower income could be influential in this matter. A future study which includes data of these potentially related variables would be of great value. As expected, students from the high school in Aasiaat had the lowest prevalence of PTSD. This confirms that these students may be more resilient and resourceful compared to the other students.

Findings suggest that living in a single-parent household is strongly correlated with development of PTSD (11,12,14,15). This may be attributable to a lack of stable role-models, parental supervision, or to conflicts between separated parents (21). The often lower socio-economic status of single parents may be an additional influential factor (14). However, among the Greenlandic adolescents', not living with 2 parents, was not found to be a significant predictor of PTSD, in the present study.

Findings regarding how age influences post-trauma outcomes have been very inconsistent (42). In the present study, the students' age was not significantly related to PTSD. Also, no relation between age and PTSD has been found in similar studies of adolescents from 7 very

culturally different nations (11–17). This may be due to the relatively short span between the youngest and the oldest of participants.

### Limitations

There are several limitations to this study. The primary limitation is that the study is based only on students' self-reports. This could have produced a response bias. It is, however, likely that the use of the event list may be advantageous in this context, as it promotes recognition rather than recall, which is less distressing in the report of emotionally stressful events (43). Furthermore, the anonymity of self-report questionnaires may have made it easier for the students to report taboo-related subjects compared to an interview. Although the event questionnaire has not been validated, it seems to function well across cultures (21). In the present study all events were experienced by the students with a high prevalence and the open item "other traumas" (item 20) was mainly used to add aspects to events that had already been ticked off. This supports the relevance of the 19 chosen event-items. Furthermore, since the study has only been conducted in 2 middle sized towns in Northern West Greenland, the study may not be fully representative for Greenland. It is possible that data from smaller and bigger communities and/or from the east coast would reveal somewhat different results.

### Conclusion

The current study was designed to provide epidemiological information about exposure to PTEs together with the prevalence of probable PTSD in a Greenlandic youth sample. This is invaluable to the Greenlandic Home Rule Government, because it provides them with recent relevant data on Greenlandic adolescents' experiences and mental health. As such, the findings may be useful in developing interventions targeted against the negative development that seems to have taken place in the Greenlandic society. Secondly, these findings are invaluable to the field of psychotraumatology because they provide epidemiological data from an isolated and culturally different country, enabling comparisons with studies from other parts of the world. There is increasing evidence to suggest that experiencing PTEs is a part of life for most adolescents. The present data suggest that Greenlandic adolescents are not more exposed to PTEs than adolescents from other parts of the world, but that they are, indeed, more exposed to certain specific PTEs such as attempted suicide, death of someone close, rape, sexual abuse, pregnancy or abortion, physical abuse, near drowning and the absence of a parent in a much higher degree than adolescents from most other nations. In addition, the present study revealed a particular vulnerability towards experiencing certain PTEs in Greenlandic girls. Of the Greenlandic students 17.1%

met the criteria for PTSD and a further 14.2% reached the level of subclinical PTSD. This relatively high prevalence is very similar to the prevalence found in 2 other isolated, prior island colonies (i.e. Iceland and The Faroe Islands). This finding is very interesting, because the specific cultural process that has taken place in these countries may be important underlying factors in the aetiology of PTSD for the indigenous populations in these countries. It was found, that a low education level of the father and the number of direct and indirect PTEs experiences significantly predicted PTSD. In contrast, gender, age, a low education level of the mother, living in Qasigianguit (as opposed to living in Aasiaat) and living with both parents were not found to predict PTSD.

### Conflict of interest and funding

The authors have not received any funding or benefits from industry or elsewhere to conduct this study.

### References

- Breslau N, Kessler RC, Chilcoat HD, Schultz LR, Davis GC, Andreski P. Trauma and posttraumatic stress disorder in the community: The 1996 Detroit Area Survey of Trauma. *Arch Gen Psychiat*. 1998;55:626–31.
- Feeny N, Foa E, Treadwell K, March J. Posttraumatic stress disorder in youth: a critical review of the cognitive and behavioral treatment outcome literature. *Prof Psychol-Res Pr*. 2004;35:466–76.
- Caffo E, Foresi B, Lievers LS. The impact, psychological sequelae and management of trauma affecting children and adolescents. *Curr Opin Psychiatry*. 2005;18:422–8.
- Dyregrov A, Yule W. A review of PTSD in children. *J Child Adolesc Ment Health*. 2006;11:176–84.
- Nielsen B, Köhler L. National indicators of child health and well-being in Greenland. *Scand J Public Health*. 2009;37:347–56.
- Curtis T, Larsen FB, Helweg-Larsen K, Bjerregaard P. Violence, sexual abuse and health in Greenland. *Int J Circumpolar Health*. 2002;61:110–22.
- Curtis T, Larsen HB, Helweg-Larsen K, Pedersen CP, Olesen I, Sørensen K, et al. Unges trivsel i Grønland 2004 [The wellbeing of Greenlandic adolescents 2004]. *Inussuk Arktisk forskningsjournal* 1. Atuagkat ApS; 2006. Available from: [http://dk.nanoq.gl/sitecore/content/Websites/nanoq/Emner/Landsstyre/Departement/Departement\\_for\\_uddannelse/Forskning/Inussuk%20-%20Arktisk%20Forskning/journal/~media/40B9D6450B2E41FA8F81F31BEE0A6D60.ashx](http://dk.nanoq.gl/sitecore/content/Websites/nanoq/Emner/Landsstyre/Departement/Departement_for_uddannelse/Forskning/Inussuk%20-%20Arktisk%20Forskning/journal/~media/40B9D6450B2E41FA8F81F31BEE0A6D60.ashx)
- Bjerregaard P, Lyng I. Suicide: a challenge in modern Greenland. *Arch Sui Res*. 2006;10:109–220.
- Yeomans PD, Forman EM. Cultural factors in traumatic stress. In: Eshun S, Gurung R, editors. *Sociocultural influences on mental health*. Boston: Blackwell; 2009. p. 221–44.
- Herbert JD, Forman EM. Cross-cultural perspectives on posttraumatic stress. In: Rosen GM, Frueh BC, editors. *Clinician's guide to posttraumatic stress disorder*. Hoboken, NJ: Wiley; 2010. p. 235–61.
- Elklit A. Victimization and PTSD in a Danish national youth probability sample. *J Am Acad Child Psy*. 2002;41:174–81.
- Bödvarsdóttir Í, Elklit A. Victimization and PTSD-like states in an Icelandic youth probability sample. *BMC Psychiatry*. 2007;7:1–26.
- Rhiger M, Elklit A, Lasgaard M. Trauma in an Israeli youth sample: an investigation of the prevalence and psychological impact of exposure to traumatic experiences. *Nord Psychol*. 2008;60:101–13.
- Domanskaitė-Gota V, Elklit A, Christiansen DM. Victimization and PTSD in a Lithuanian national youth probability sample. *Nord Psychol*. 2009;61:66–81.
- Petersen T, Elklit A, Olesen JG. Victimization and PTSD in a Faroese youth total-population sample. *Scand J Psychol*. 2010;51:56–62.
- Rasmussen D, Elklit A. Victimization and PTSD in an Indian youth sample. *Indian Journal of Psychiatry*. (Submitted).
- Karsberg S, Elklit A. Victimization and PTSD in a Rural Kenyan youth sample. *Clinical Practice and Epidemiology in Mental Health*. In press.
- Kjær L. Mail correspondence with Lotte Kjær, governmental supervisor of education and research in Greenland. 2012.
- Balvig F. RisikoUngdom – Ungdomsundersøgelse 1999 [Youth at Risk – Youth Study 1999]. København: Det kriminalpræventive Råd; 2000.
- American Psychiatric Association. *Diagnostic and statistical manual of mental disorders*, 4th Edition. Washington, DC: American Psychiatric Association.
- Elklit A, Petersen T. Exposure to traumatic events among adolescents in four nations. *Torture*. 2008;18:2–11.
- Mollica RF, Caspi-Yavin Y, Billini P, Truong T, Tor S, Lavelle J. The Harvard Trauma Questionnaire: validating a cross-cultural instrument for measuring torture, trauma, and post traumatic stress disorder in Indochinese refugees. *J Nerv Ment Dis*. 1992;180:111–6.
- Kleijn WC, Hovens JE, Rodenburg JJ. Posttraumatic stress symptoms in refugees: assessments with the Harvard Trauma Questionnaire and the Hopkins Symptom Checklist-25 in different languages. *Psychol Rep*. 2001;88:527–32.
- Kirmayer LJ, Brass GM, Tait CL. The mental health of Aboriginal peoples: transformations of identity and community. *Can J Psychiatry*. 2000;45:607–16.
- Kirmayer LJ, Boothroyd LJ, Hodgins S. Attempted suicide among Inuit youth: psychosocial correlates and implications for prevention. *Can J Psychiatry*. 1998;43:816–22.
- Boothroyd LJ, Kirmayer LJ, Spreng S, Malus M, Hodgins S. Completed suicides among the Inuit of northern Quebec, 1982–1996: a case control study. *CMAJ*. 2001;165:749–55.
- Haggarty JM, Cernovsky Z, Bedard M, Merskey H. Suicidality in a sample of Arctic households. *Suicide Life Threat Behav*. 2008;38(6):699–707.
- Kirmayer LJ, Simpson C, Cargo M. Healing traditions: mental health promotion with Canadian Aboriginal peoples. *Australas Psychiatry*. 2003;11:15–23.
- Lyng I. Mental disorders and conditions of life in childhood in Greenlanders. *Arctic Med Res*. 1995;54:60–7.
- Kassam A. Encounters with the North: psychiatric consultation with Inuit youth. *J Can Acad Child Adolesc Psychiatry*. 2006;15(4):174–8.
- Furr JM, Comer JS, Edmunds JM, Kendall PC. Disasters and youth: a meta-analytic examination of posttraumatic stress. *J Consult Clin Psych*. 2010;78:765–80.
- Kaysen D, Rosen G, Bowman M, Resick PA. Duration of trauma exposure and the dose-response model of PTSD. *J Interpers Violence*. 2010;25:63–74.
- Hoge CW, Castro CA, Messer SC, McGurk D, Cotting DI, Koffman RL. Combat duty in Iraq and Afghanistan, mental health problems, and barriers to care. *N Engl J Med*. 2004;351:13–22.
- Goenjian AK, Walling D, Steinberg AM, Karayan I, Najarian LM, Pynoos R. A prospective study of posttraumatic stress

- and depressive reactions among treated and untreated adolescents 5 years after a catastrophic disaster. *Am J Psychiatry*. 2005;162(12):2302–8.
35. Bowman ML, Yehuda R. Risk factors and the adversity-stress model. In: Rosen GM, editor. *Posttraumatic stress disorder: issues and controversies*. Chichester, UK: Wiley; 2004. p. 39–61.
  36. Brewin CR, Andrews B, Valentine JD. Meta-analysis of risk factors for posttraumatic stress disorder in trauma-exposed adults. *J Consult Clin Psychol*. 2000;68:748–66.
  37. Ozer EJ, Best SR, Lipsey TL, Weiss DS. Predictors of posttraumatic stress disorder and symptoms in adults: a meta-analysis. *Psychol Bull*. 2003;129:52–73.
  38. Ditlevsen DN, Elklit A. The combined effect of gender and age on posttraumatic stress disorder: do men and women show differences in the lifespan distribution of the disorder? *Arch Gen Psychiatry*. 2010;9:32.
  39. Brewin CR, Andrews B, Valentine JD. Meta-analysis of risk factors for posttraumatic stress disorder in trauma-exposed adults. *J Consult Clin Psychol*. 2000;68:748–66.
  40. Kimerling R, Ouimette P, Wolfe J, editors. *Gender and PTSD*. New York: The Guilford Press; 2002.
  41. Niclasen B, Løngard K, Laursen L, Schnohr C. Health on the top. Results from the HBSC study in Greenland in 2006. [Sundhed på Toppen. Resultater fra HBSC undersøgelsen i Grønland i 2006]. *Inussuk Arctic Res J*. 2007; 1. Available from: [http://dk.nanoq.gl/Emner/Landsstyre/Departementer/Departement\\_for\\_uddannelse/Forskning/~media/BC8C49C69FD84D36A6EBD4426490601A.ashx](http://dk.nanoq.gl/Emner/Landsstyre/Departementer/Departement_for_uddannelse/Forskning/~media/BC8C49C69FD84D36A6EBD4426490601A.ashx)
  42. Norris FH, Perilla J, Ibañez GE, Murphy AD. Placing age differences in cultural context: a comparison of the effects of age on PTSD after disasters in the United States, Mexico, and Poland. *J Clin Geropsych*. 2002;8(3):153–73.
  43. Willis GB, Gonzalez A. Methodological issues in the use of survey questionnaires to assess the health effects of torture. *J Nerv Ment Dis*. 1998;186:283–9.

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