

## RESEARCH REPORT

# Higher blood pressure among Inuit migrants in Denmark than among the Inuit in Greenland

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**Study objective:** Previous studies of blood pressure among the Inuit have given inconsistent results and studies comparing Inuit migrants with those living in traditional Inuit areas are absent. The purpose of the study was to compare the blood pressure of the Inuit in Greenland with that of Inuit migrants in Denmark.

**Design:** Questionnaire, interview, and clinical examination in a cross sectional random population sample.

**Setting:** A population based survey among Inuit in Greenland and Inuit migrants in Denmark.

**Participants:** 2046 Inuit aged  $\geq 18$ , 61% of the sample.

**Main results:** Age and gender adjusted blood pressures were 117/72 mm Hg in Greenland and 127/81 mm Hg among the migrants ( $p < 0.001$ ). In both populations, blood pressure increased with age and body mass index, and was higher among men and non-smokers. In Greenland, blood pressure increased with the level of school education. The associations with Inuit heritage, alcohol, diet, and physical activity were not significant. The difference between the two populations persisted after adjusting for age, gender, body mass index, education, and smoking. Among those who had completed high school, there was no difference between the systolic blood pressure of the two populations while the difference for diastolic blood pressure was much less than for those with less education.

**Conclusions:** Blood pressure was lower among the Inuit in Greenland than among the Inuit migrants in Denmark but the difference was absent (systolic pressure) or reduced (diastolic pressure) among the better educated. The results suggest that the blood pressure of the Inuit, especially Inuit men, may be responsive to factors related to the modern Western way of life.

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The Inuit of Greenland are an aboriginal population group genetically and culturally closely related to the Inupiat of Alaska and the Inuit of Canada. The studies of blood pressure among the Inuit/Inupiat that have been conducted during the past 25 years have given inconsistent results because the study protocols used have varied considerably, because the age composition of the populations studied differed, and because of random variation due to small study populations. The following comparisons were based on published figures of mean blood pressure for both sexes as close to 50 years of age as possible. Simper<sup>1</sup> studied inpatients in Thule (north Greenland) and found very low systolic as well as diastolic blood pressures (112/74 mm Hg) and no increase with age. Other studies from Greenland showed systolic pressures of 124–134 mm Hg and diastolic pressures of 77–82 mm Hg.<sup>2–4</sup> Studies from Canada showed systolic pressures of 129–130 mm Hg and diastolic pressures of 75–77 mm Hg,<sup>5,6</sup> while studies among the Alaska Inupiat reported systolic pressures of 114–124 mm Hg and diastolic pressures of 71–76 mm Hg.<sup>7,8</sup> Compared with the general population of Denmark,<sup>9</sup> with blood pressures of 125/83, the systolic blood pressure was generally higher and the diastolic pressure lower among the Inuit in Greenland and Canada, while both were lower in Alaska.

Studies on blood pressures in migrant populations have generally shown increases of 5–10 mm Hg in systolic and diastolic pressures among the migrants compared with non-migrants, or urban compared with rural residents of the same ethnic group.<sup>10</sup> The difference among the Japanese in Japan, Hawaii, and California was to a large extent explained by a higher relative weight of the last group.<sup>11</sup> In a follow up of Tokelau Islanders, who migrated to New Zealand, men exhibited a pattern of rising systolic pressure around the time of

migration to a level, which was then maintained, while the diastolic pressure took longer time to respond to the migration stimuli. Most of the rise in blood pressure could be explained by weight gain. The pattern for women was less clear.<sup>12</sup> Kenyan Luo who migrated to urban Nairobi showed an initial and sustained increase in systolic pressure and a slower increase in diastolic pressure. The pattern was similar for men and women and was explained by weight gain and a high sodium intake among the migrants.<sup>13</sup> A cross sectional comparison of Yi farmers and Yi migrants to an urban centre showed higher systolic and diastolic blood pressure among migrant men and higher diastolic pressure among migrant women after adjustment for age and body mass index.<sup>14</sup>

Only two studies among the Inuit have information on the effect of migration on blood pressure. In the central Canadian Arctic, the mean blood pressure of the Inuit was 105/69 in 1969. Two years later, the systolic blood pressure had increased on average by 8–10 mm Hg and the diastolic by 7–8 mm Hg, possibly as a result of urbanisation because most families during the two years had moved from outlying camps to the settlement of Igloolik.<sup>15</sup> Among the Alaska Inuit, the prevalence of systolic and diastolic hypertension was found to be higher among residents in towns compared with villages.<sup>16</sup>

Blood pressure has been shown to vary among other things with obesity, physical activity, diet, alcohol, smoking, and stress. It is debatable whether n-3 fatty acids can lower blood pressure among normotensives but several studies have shown a significant reduction among hypertensives.<sup>17–21</sup> Among the Inuit of Northern Québec (Nunavik) there was no association of blood pressure with a modernisation index based on subsistence activities, source of income, language proficiency, job type, and education.<sup>5</sup> Among the Inuit in Alaska blood pressure increased with increased consumption



**Figure 1** Map of Greenland with towns and study areas.

of store bought food relative to traditional food, increased body mass index, increased mechanised activity, and glucose intolerance.<sup>7</sup> In a previous study from Greenland we found no association of systolic or diastolic blood pressure with the consumption of traditional marine food.<sup>22</sup>

The purpose of this study was to compare the blood pressure between the Inuit of Greenland and Inuit migrants in Denmark. Genetics (Inuit blood quantum), body mass index, education, smoking, alcohol, diet, and physical activity were analysed as possible determinants and confounders.

## METHODS

### Study population and sample

The population of Greenland is 56 000 of which an estimated 90% are ethnic Greenlanders (Inuit). Furthermore, an estimated 8000 ethnic Greenlanders live in Denmark permanently or for shorter periods for educational purposes. Living conditions are considerably different in Greenland and Denmark. The towns and villages in Greenland are small, hunting and fishing are important leisure time activities, and traditional Greenlandic food makes up a significant proportion of the diet. In Denmark, the Inuit migrants are well integrated into the Danish society and their lifestyle is similar to that of the general population in a Western industrialised country.

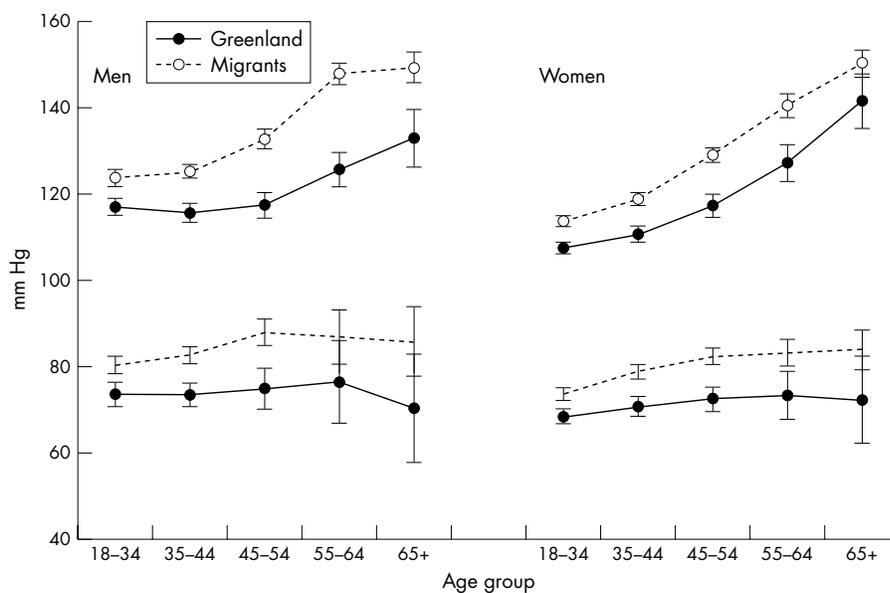
Data were collected from 1998 to 2001 among adult Greenlanders (Inuit) living in Denmark, Nuuk, Qasigiannuguit, and four villages in the district of Uummannaq. The study areas in Greenland are shown in figure 1. In Nuuk, a random sample of the population was invited to participate while in Qasigiannuguit and Uummannaq everybody was invited. In Denmark, a two stage procedure was used to identify the Inuit. Firstly, persons born in Greenland were identified from the Central Population Register. In order to approximate the age composition in Greenland, a sample of these were drawn including a random sample of those aged 18–44 years and everybody aged 45 and above. A questionnaire was mailed to the sample and information on ethnicity was obtained from 77%. A random sample of the Greenlanders was invited to participate in the study. From Greenland and Denmark, a total of 3327 Inuit aged 18 and above was invited to participate in the study. Information was obtained from 2046 (61%). The participation rate was 54% in Denmark and 66% in Greenland ( $p < 0.001$ ). Only Inuit defined as persons with at least one Inuit parent or Inuit self identification were included in the study.

The mean age of the participants in Greenland was 43.4 years compared with 44.2 years of the non-participants; in Denmark the mean age of the participants was 41.7 years and of the non-participants 41.5 years. Neither difference was statistically significant. Men were underrepresented in both populations: 44% among the participants and 56% among the non-participants in Greenland ( $p < 0.001$ ) and 27% among the participants and 32% among the non-participants in Denmark ( $p = 0.01$ ).

The study was approved by the ethical review committee for Greenland. All subjects had been informed about the study in writing and orally, and had given their informed consent in writing before enrolment.

### Interviews and questionnaires

Data were collected by structured interviews and self administered questionnaires. The survey questionnaires were developed in Danish and subsequently translated into Greenlandic. The translation procedure included translation by two or more interpreters followed by an independent back translation into Danish and revision of the translation as needed. In Denmark almost all the information was obtained using the survey instruments in the Danish language, while in Greenland almost all information was obtained in the Greenlandic language. In Denmark, the sociodemographic background information was



**Figure 2** Systolic and diastolic blood pressure according to age. Inuit in Greenland and Inuit migrants in Denmark 1998–2001. Means and 95% confidence intervals.

**Table 1** Associations of blood pressure with age and gender adjusted for age differences. Inuit in Greenland and Inuit migrants in Denmark, 1998–2001

	Greenland Number (%)	Migrants Number (%)	Systolic blood pressure		Diastolic blood pressure	
			Greenland Mean (95% CI)*	Migrants Mean (95% CI)*	Greenland Mean (95% CI)*	Migrants Mean (95% CI)*
Age p=0.04†						
18–34	378 (31)	212 (31)	112 (110 to 114)	117 (115 to 120)	71 (70 to 77)	76 (75 to 78)
35–44	312 (26)	199 (29)	113 (111 to 115)	120 (118 to 123)	72 (71 to 73)	80 (78 to 81)
45–54	255 (21)	155 (23)	117 (115 to 119)	130 (127 to 132)	74 (72 to 75)	84 (82 to 85)
55–64	174 (14)	79 (12)	127 (124 to 129)	142 (139 to 146)	75 (73 to 77)	84 (82 to 86)
65+	97 (8)	35 (5)	138 (135 to 141)	150 (145 to 156)	72 (69 to 74)	85 (81 to 88)
Gender p<0.001†						
Male	547 (45)	183 (27)	119 (118 to 121)	131 (129 to 133)	74 (73 to 75)	84 (82 to 85)
Female	669 (55)	497 (73)	116 (115 to 117)	124 (123 to 126)	71 (70 to 72)	79 (78 to 80)
			p<0.001	p<0.001	p<0.001	p<0.001

\*CI=confidence intervals; †p for age and gender differences between the two populations.

obtained by mailed questionnaires while in Greenland both mailed questionnaires and interviews were used.

Blood quantum was estimated from questions on the ethnicity of the four grandparents and if this information was missing of the parents. It was subsequently recoded as full (all grandparents were Inuit) or part Inuit heritage. Education was recorded as the grade completed. Diet was recorded in a food frequency questionnaire comprising 14 different traditional and imported food types, among which seal meat, fresh fruit, vegetables, and milk products were used in the analyses. The frequency categories were “daily”, “4–6 times a week”, “1–3 times a week”, “2–3 times a month”, “once a month or less often”, and “never”. Smoking behaviour was categorised into non (never) smokers, previous smokers, smokers of 1–14 cigarettes per day, smokers of 15 or more cigarettes per day, and other smokers (cigarette smokers with no information on quantity smoked, smokers of pipe or cigars). A semiquantitative measure of alcohol consumption was based on a question in the self administered questionnaire about when was the last time the respondent had a glass of beer, wine or liquor, and how much he/she drank on that occasion. Participants rated their physical activity level during leisure time summer and winter on a five point scale ranging from sedentary (read, watch television) to very active (heavy exercise several times a week).

### Physical measurements

Clinical data were collected by interviews, physical examinations, and blood sampling. The clinical examinations took place at the local hospital. In Greenland, participants had fasted overnight and examinations took place between 8 am and 2 pm. In Denmark, participants were non-fasting and examinations took place between 8 am and 8 pm. Height and weight were measured with the participants stripped to their underwear and socks. Blood pressure was measured at the right arm of the sitting participant after at least five minutes of initial rest. Using a standard mercury sphygmomanometer with an appropriately sized cuff, the blood pressure was read to the nearest mm Hg three times with a one minute interval. Systolic and diastolic blood pressures were determined at the first and fifth Korotkoff sounds. The two last measurements were averaged for the analyses.

### Statistical methods

The questionnaires were coded and double entered on the computer. Values outside the permitted range were corrected against the questionnaires. Data processing and statistical analysis was performed using standard statistical software (SAS and SPSS). The  $\chi^2$  test was used to calculate p values in tables 1 and 2. Confidence intervals in figure 2 were calculated

**Table 2** Distribution of the independent variables in the analyses of blood pressure among Inuit in Greenland and Inuit in Denmark 1998–2001. p Values for comparisons between the two populations

	Greenland n (%)	Migrants n (%)	p
Blood quantum, 96 missing			
75% or less Inuit heritage	124 (11)	326 (49)	
Full Inuit heritage	1004 (89)	346 (51)	<0.001
Body mass index, 18 missing			
–24.9	572 (47)	381 (57)	
25.0–29.9	413 (34)	217 (33)	
30+	226 (19)	69 (10)	<0.001
School education, 27 still in school, 197 missing			
0–8 years	460 (43)	125 (20)	
9–10 years	273 (26)	299 (49)	
11–12 years	272 (26)	44 (7)	
High school	57 (5)	142 (23)	<0.001
Smoking, 105 missing			
Non-smokers	149 (13)	120 (18)	
Previous smokers	173 (15)	145 (22)	
1–14 cigarettes per day	545 (48)	219 (34)	
15+ cigarettes per day	210 (18)	153 (24)	
Other smokers	64 (6)	13 (2)	<0.001
Physical activity, 180 missing			
Inactive	139 (11)	83 (12)	
Moderately active	741 (61)	440 (66)	
Highly active	214 (18)	99 (15)	0.17
Alcohol consumption, 347 missing			
None	179 (19)	43 (7)	
1–13 drinks per week	601 (65)	463 (75)	
14+ drinks per week	148 (16)	115 (19)	<0.001
Consumption of			
Seal meat, 103 missing			
Weekly	488 (44)	2 (0)	
Less often	631 (56)	672 (100)	<0.001
Fish, 115 missing			
Weekly	646 (58)	307 (46)	
Less often	462 (42)	366 (54)	<0.001
Vegetables, 139 missing			
Daily	198 (18)	242 (36)	
Less often	883 (82)	434 (64)	<0.001
Fresh fruit, 147 missing			
Daily	129 (12)	302 (45)	
Less often	944 (88)	374 (55)	<0.001
Milk products, 145 missing			
Daily	183 (17)	220 (33)	
Less often	893 (83)	455 (67)	<0.001

from standard errors of the mean. General linear models (the UNIANOVA procedure of SPSS) were used to estimate blood pressure values adjusted for confounders and to calculate p values and confidence intervals in tables 1 and 3 and figure 3.

**Table 3** Univariate associations of systolic and diastolic blood pressure with determinants for blood pressure among the Inuit in Greenland and Inuit migrants in Denmark, 1998–2001. Age adjusted values

	Systolic blood pressure		Diastolic blood pressure	
	Greenland Mean (95% CI)*	Migrants Mean (95% CI)*	Greenland Mean (95% CI)*	Migrant Mean (95% CI)*
<b>Men</b>				
Body mass index				
-24.9	117 (116 to 119)	129 (126 to 132)	72 (70 to 73)	81 (79 to 84)
25.0–29.9	118 (116 to 121)	130 (126 to 134)	75 (73 to 76)	85 (82 to 87)
30+	126 (123 to 130)	142 (135 to 149)	80 (78 to 82)	89 (85 to 94)
	p<0.001	p=0.003	p<0.001	p=0.001
School education				
0–8 years	115 (113 to 117)	132 (126 to 138)	73 (71 to 74)	87 (83 to 91)
9–10 years	119 (116 to 122)	130 (127 to 134)	75 (73 to 77)	84 (82 to 86)
11–12 years	126 (123 to 129)	136 (124 to 148)	77 (75 to 79)	85 (76 to 93)
High school	127 (121 to 134)	130 (126 to 135)	77 (72 to 81)	82 (79 to 86)
	p=0.004	p=0.50	p=0.18	p=0.09
Smoking				
Never	127 (123 to 131)	136 (131 to 142)	80 (77 to 82)	84 (80 to 88)
Previously	120 (117 to 124)	130 (126 to 135)	74 (72 to 77)	87 (83 to 90)
1–14 cigarettes per day	118 (116 to 120)	131 (126 to 135)	74 (72 to 75)	84 (81 to 87)
15+ cigarettes per day	117 (114 to 120)	130 (125 to 135)	73 (71 to 75)	83 (80 to 86)
Other smokers	114 (108 to 119)	125 (114 to 136)	73 (69 to 76)	75 (68 to 82)
	<0.001	p=0.06	p=0.005	p=0.003
<b>Women</b>				
Body mass index				
-24.9	112 (111 to 114)	121 (120 to 123)	68 (67 to 69)	77 (76 to 78)
25.0–29.9	117 (115 to 119)	127 (124 to 129)	72 (71 to 73)	81 (80 to 83)
30+	122 (120 to 125)	133 (129 to 138)	76 (74 to 77)	84 (81 to 87)
	p<0.001	p<0.001	p<0.001	p<0.001
School education				
0–8 years	115 (113 to 117)	129 (126 to 132)	70 (69 to 72)	81 (79 to 84)
9–10 years	116 (113 to 118)	122 (120 to 124)	72 (70 to 74)	78 (77 to 80)
11–12 years	115 (113 to 118)	123 (119 to 128)	72 (70 to 73)	81 (78 to 85)
High school	118 (113 to 123)	122 (119 to 125)	73 (69 to 76)	77 (75 to 79)
	p=0.06	p=0.90	p=0.05	p=0.50
Smoking				
Never	121 (118 to 125)	128 (125 to 131)	75 (72 to 77)	81 (79 to 83)
Previously	120 (117 to 123)	126 (123 to 129)	73 (71 to 75)	80 (78 to 82)
1–14 cigarettes per day	114 (113 to 116)	122 (120 to 124)	70 (69 to 71)	78 (77 to 80)
15+ cigarettes per day	112 (109 to 116)	124 (121 to 127)	70 (67 to 72)	78 (76 to 80)
Other smokers	116 (111 to 122)	128 (114 to 142)	73 (69 to 77)	83 (73 to 92)
	p<0.001	p=0.06	p<0.001	p=0.17

\*CI=confidence intervals.

## RESULTS

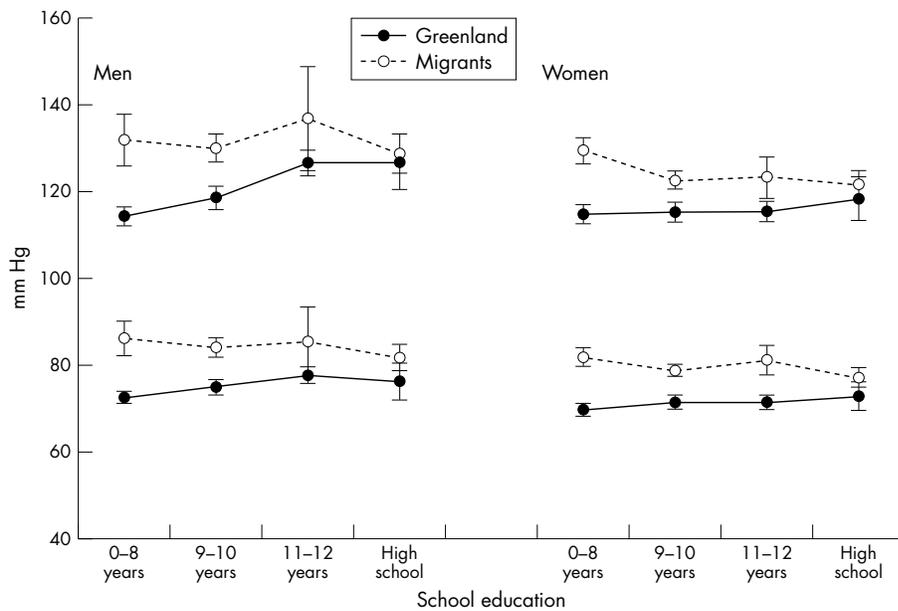
Among the 2046 participants, less than three blood pressures were recorded in 52 and 98 were under medical treatment for hypertension. Adjusted for age differences, 4.2% of participants from Greenland compared with 6.1% among the migrants were being medically treated for hypertension ( $p=0.05$ ). These were excluded from the present analyses, which were performed on 1896 Inuit, 1216 from Greenland, and 680 migrants in Denmark. The migrants were slightly younger than the residents in Greenland and there were considerably more women (table 1). Systolic and diastolic blood pressures exhibited similar age patterns in the two populations but were higher throughout among the Inuit migrants in Denmark than among the Inuit in Greenland (fig 2 and table 1). Adjusted for age and gender, the mean blood pressure was 117/72 in Greenland (95% confidence intervals 116 to 118; 72 to 73) and 127/81 among the migrants (95% confidence intervals 125 to 128; 80 to 82). The difference between the two population groups was statistically significant ( $p<0.001$ ) for both systolic and diastolic blood pressure.

The two population groups differed significantly with respect to a number of biological, socioeconomic, and behavioural factors (table 2). Almost half of the migrants were of mixed heritage and the migrants were significantly leaner than the residents of Greenland. The migrants had on average had a much longer school education; 23% had finished high school compared with only 5% of the residents of Greenland.

Smoking was more prevalent in Greenland but there were more heavy smokers among the migrants. Alcohol consumption was considerably less among the residents in Greenland and there were in particular almost three times as many total abstainers than among the migrants. The diet of the residents of Greenland was characterised by a high consumption of seal meat and fish and a low consumption of vegetables, fresh fruit, and milk products. Finally, there was no statistically significant difference between the two populations with regard to physical activity. This was the result of a relatively high level of physical activity among the villagers in Greenland balanced by a low level among the towns people.

The age and gender adjusted associations of all variables from table 2 with blood pressure were explored in general linear models. Only the associations of body mass index, school education, and smoking were statistically significant (table 3). Blood pressure increased with body mass index in both populations. In Greenland, blood pressure increased with increasing level of school education while it remained constant among the migrants. The increase was particularly pronounced for systolic blood pressure among men ( $p=0.004$ ). In both populations but most pronounced among the residents of Greenland, blood pressure was higher among non-smokers and previous smokers than among current smokers.

The mean and median length of residence in Denmark of the migrants was 23 years, and 94% had lived in Denmark for more than five years. There were no significant differences in blood pressure according to the length of the stay in Denmark.



**Figure 3** Systolic and diastolic blood pressure according to level of school education. Adjusted for age. Inuit in Greenland and Inuit migrants in Denmark 1998–2001. Means and 95% confidence intervals

Among the migrants, 34% of the examinations were performed after 4 pm, while all examinations in Greenland took place before this hour. Among the migrants, blood pressure adjusted for age, gender, body mass index, and school education was significantly higher late in the day for previous smokers (124/79 mm Hg before 4 pm and 132/87 mm Hg later in the day (systolic  $p=0.04$ ; diastolic  $p<0.001$ ) while there was no difference for non-smokers or any of the categories of smokers. Among the Inuit in Greenland, most participants were fasting while all of the migrants were non-fasting. In Greenland, no significant differences were found between the blood pressure of those who were fasting and those who by mistake were not.

In a general linear model with adjustment for age, gender, body mass index, school education, and smoking, mean systolic and diastolic blood pressures remained significantly higher among the Inuit migrants in Denmark than among the Inuit in Greenland ( $p<0.001$ ). The adjusted mean blood pressure was 117/72 in Greenland (95% confidence intervals 116 to 118; 72 to 73) and 126/81 among the migrants (95% confidence intervals 125 to 127; 80 to 82), which is almost similar to the values adjusted for age and gender only. For systolic blood pressure, however, there was a significant interaction between place of residence and school education. Figure 3 shows that the differences between residents in Greenland and migrants tended to decrease with increasing school education. Among those who had completed high school, systolic blood pressure was not significantly different in the two populations while the diastolic blood pressure was still higher among the migrants ( $p=0.04$  for men and 0.02 for women). The increase of systolic blood pressure with school education was more well defined for men in Greenland ( $p=0.002$ ) than for women ( $p=0.045$ ).

## DISCUSSION

Inuit migrants in Denmark were observed to have significantly higher blood pressure than the Inuit in Greenland but the difference decreased with increasing level of school education. The findings were supported by the more frequent reporting of treatment for hypertension among the migrants, although this could be influenced by different standards for medical care in Greenland and Denmark. Within each population, the traditional determinants—age, gender, body mass index, and smoking—exhibited the expected associations with blood pressure, but the differences between the two

### Key points

- Blood pressure was higher among the Inuit migrants in Denmark (127/81 mm Hg) than among the Inuit in Greenland (117/72 mm Hg).
- Unlike in other studies among migrants, body mass index was lower among the migrants and did not explain the difference in blood pressure.
- The difference between Inuit in Greenland and migrants decreased with the level of education.
- Modernisation rather than migration is a plausible explanation for the rise in blood pressure.

populations could not be explained by these determinants. Inuit blood quantum, alcohol consumption, and dietary habits differed significantly between the two populations but these variables were not related to blood pressure. In most studies of migrants from rural to urban areas, an increased body mass index among the migrants has partly explained the increased blood pressure. In this study the migrants were significantly leaner than the population in Greenland and adjusting for body mass index did not modify the difference between blood pressures in the two populations to any great extent.

The differences in the study design between Denmark and Greenland in particular with respect to fasting and the hour of examination may have influenced the comparability of the results. Studies in the general population of Denmark have shown the daytime variation of blood pressure to be minimal,<sup>9</sup> and although in our study migrant previous smokers examined late in the afternoon or evening had higher blood pressure than those examined earlier in the day, the difference was small compared with the overall difference between the Inuit in Greenland and the migrants. Fasting was not associated with blood pressure.

There may be dietary differences between Greenland and Denmark that were not captured by the food frequency questions. Differences in the consumption of marine mammals, fish, vegetables, fresh fruit, and milk products were not associated with blood pressure in either population, and adjusting for these dietary factors did not modify the difference between the populations. The intake of sodium and potassium is known to influence blood pressure but this was not measured in our study.

Our study showed significantly higher blood pressure among the Inuit migrants in Denmark than among the Inuit

in Greenland but this general finding was modified by school education, particularly among men. School education is a proxy for modernisation or Westernisation and it is thus reasonable to assume that the increased blood pressure among the migrants is not so much caused by the migration in itself but by the modernisation process, which started earlier and is more advanced in Denmark. Thouez did not find consistent support for his hypothesis that blood pressure increased with modernisation among the Canadian Inuit<sup>5</sup> but the associations of high blood pressure with a non-traditional diet and with mechanised activity in Alaska supports our findings.<sup>7</sup> The higher responsiveness of men to migration or modernisation was also noted in other studies of blood pressure.<sup>12-14</sup>

Our study suggests that the blood pressure of the Inuit may be responsive to certain factors related to the modern Western way of life. Several studies have shown associations between cardiovascular disease and psychosocial factors like type A behaviour, depression and anxiety, psychosocial work characteristics, and the lack of social support,<sup>23</sup> some of which are likely to be more prevalent in a modern Western society than in a more traditional society. As the way of life in Greenland becomes increasingly European, an increase of both systolic and diastolic blood pressure may occur in the population. This is an important risk factor for atherosclerosis, ischaemic heart disease, and stroke, together with smoking, overweight, and diabetes, which have increased during the past decades.<sup>24</sup> The Inuit in Greenland may still be protected from atherosclerosis and ischaemic heart disease by their high consumption of marine food and their physically active life style, but it is questionable how far this protection goes when other risk factors increasingly pull in the opposite direction.

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