**Objectives.** Until recently it has been a widely accepted opinion that the incidence of diabetes among Inuit in Greenland was low. More recent studies from Canada and Alaska have demonstrated that diabetes is increasingly common among Inuit, similar to global trends for indigenous people, and genetic studies have indicated that the Inuit may have an increased risk of developing diabetes and insulin resistance related disease. This was the background for the initiation of the Greenland Population Study, which was the first population-based study in Greenland where all participants received an oral glucose tolerance test. The thesis attempts to describe the prevalence of diabetes and impaired glucose tolerance and the concomitant metabolic risk among Greenland Inuit.

**Study design.** From 1999 to 2001, 1108 adult Inuit participated in a health survey in Greenland. For the survey, three areas of West Greenland were chosen, i.e., the capital (Nuuk, 13,500 inhabitants) with the most westernised living conditions, four villages in a hunting district (Uummannaq, 230 – 277 inhabitants per village), and a small town with intermediate living conditions (Qasigiannguit, 1400 inhabitants). The target population was adults aged 30 years and above, and only Inuit defined as persons with at least one Inuit parent were included in the study.

For comparison, data from 6784 participants in a population based randomised Danish survey Inter99 were used.

**Methods.** The examination included a 75g Oral Glucose Tolerance Test. Body Mass Index, waist circumference, waist-to-hip ratio, and blood pressure were measured. Plasma glucose, serum insulin, lipids and urine albumin/creatinine ratio were measured.
The metabolic syndrome was diagnosed according to the WHO criteria 1999 and to the working definition suggested by the National Cholesterol Education Program (NCEP) 2001.

**Results.** A high prevalence of diabetes and impaired glucose tolerance (IGT) was found. A total of 9.7% of participants aged 35 years and above had diabetes, and 12.2% had IGT. 70% of individuals with diabetes were previously undiagnosed. The prevalence of diabetes was similar in men and women, while IGT was more frequent in women compared with men. Surprisingly the prevalence of diabetes was highest in the villages compared to towns, despite the fact that indexes of insulin resistance (HOMA IR) showed the lowest values in the villages. The paradox arising from this observation, given the high prevalence of diabetes in Greenland, may be attributable to a genetic disposition among the Inuit to deficiency in insulin secretion, rather than insulin resistance. Family history of diabetes, overweight, sedentary lifestyle, and alcohol consumption increased the risk for glucose intolerance whereas frequent intake of fresh fruit and seal meat were inversely associated with diabetic status.

Obesity was more prevalent among Inuit than among Danes according to international guidelines for overall, central, and abdominal obesity. We found the same trends in the association between obesity and metabolic effects among the Inuit and a white population, but the levels of the risk factors were significantly different. At any given level of obesity the Inuit had lower levels of 2-hour p-glucose and insulin, blood pressure, triglyceride, and higher levels of HDL cholesterol than the Danish participants. These differences remained significant after adjustment for physical activity, smoking, and alcohol consumption. Genetic and dietary factors and differences in body composition may explain why the established measures of obesity correlate so differently to components of the metabolic syndrome in different ethnic groups.

Finally, the thesis described the metabolic risk possibly associated with insulin resistance among Greenland Inuit by estimation of the prevalence of the metabolic syndrome according to the WHO definition and the definition suggested by the NCEP. 20.7% and 17.9% of the participants had the metabolic syndrome.
using the WHO and the NCEP criteria, respectively. Despite the high prevalence of obesity and glucose intolerance, the prevalence of the other metabolic disturbances, i.e. dyslipidemia and hypertension was low. These unexpected findings suggest that metabolic risk factors are also influenced by other and maybe more important factors than insulin resistance in this population.

Although the prevalence estimates of the two syndromes were similar our analyses demonstrated that the different metabolic syndrome criteria did not identify the same group of people in this Inuit population, and kappa-statistics showed only moderate agreement between the two definitions.

Conclusion. The high prevalence of diabetes and IGT in Greenland and the fact that 70% of individuals with diabetes were previously undiagnosed demands strategies for primary prevention of the conditions and increased awareness of diabetes in the health care system. Prospective studies are clearly warranted to study the impact of gene-environment interaction on future diabetes and cardiovascular disease among Inuit

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