

Nuuk 5. maj 2017

Att. Arnajaaq Lyngé

Forskningsrådet

Afrapportering for projektet: Diabetes i Grønland. Screenings aktivitet og forekomst af diabetes i Grønland 2014-2015.

Kære Forskningsråd!

I det der igen takkes for støtten til ovenstående projekt fremsendes hermed endelig afrapportering.

Projektet er afsluttet og publiceret i internationalt (peer review) tidsskrift. Der planlægges også formidling lokalt blandt andet ved offentligt i regi af Grønlandsk medicinsk selskab.

Der er vedlagt dansk resume, original artikel, bevillingsbrev samt regnskab.

Med venlig Hilsen



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Dansk Resume

Stor opmærksomhed på diabetes i sundhedsvæsenet i Grønland

Diabetes var stort set ingen diabetes i Grønland for 50-60 år siden og frem til årtusindeskiftet var der meget begrænset opmærksomhed på sygdommen i Grønland. Resultaterne fra befolkningsundersøgelsen B99 afslørede imidlertid en højforekomst af ikke erkendt diabetes i Grønland. Siden 2008 har det derfor været et fokus område for sundhedsvæsenet at øge opmærksomheden på sygdommen. I 2010 blev HbA1c, i daglig tale kaldet langtidsblodsukker, indført som ny diagnostisk metode til at stille diagnosen diabetes på for yderligere at lette opsporingen af ikke erkendte tilfælde af diabetes i Grønland. Opmærksomheden på diabetes er dog ikke blevet evalueret de seneste år.

Formålet med denne undersøgelse var derfor at undersøge af brugen af langtidsblodsukker i Grønland for voksne kvinder og mænd i alderen 20-79 år indenfor en toårig periode år (2014 og 2015) samt beregne forekomsten af diabetes og forstadier til diabetes i befolkningen.

Undersøgelsen blev udført som en tværsnitsundersøgelse på basis af et udtræk fra laboratoriet på Dronning Ingrid's Hospital, hvor alle personer, der havde fået målt mindst et langtidsblodsukker i 2014 eller 2015 blev medregnet. Det var kun det nyeste langtidsblodsukker som blev medtaget i undersøgelsen. I tilfælde hvor langtidsblodsukkeret var under 6,1 % var blev opfattet som raske, mens tilfælde med langtidsblodsukker på 6,5% eller derover blev opfattet som erkendt (diagnosticeret) diabetes. Tilfælde i mellemzonen med værdier på 6,1% til 6,4% blev opfattet som havende forstadie til diabetes. Andelen af voksne mænd og kvinder i Grønland, som var blevet undersøgt eller kontrolleret for diabetes i løbet af 2014 og 2015 blev beregnet ud fra hele befolkningen, som den var 1. Januar 2015. Desuden blev andelen af befolkningen med diabetes og forstadier hertil beregnet.

Undersøgelsen viste at 9506 personer i alderen 20-79 år var undersøgt mindst en gang indenfor de to år, hvilket svarer til at hele 24 % af alle voksne i Grønland er kontrolleret eller screenet for diabetes indenfor blot to år. Der var flest kvinder, der var undersøgt, ligesom der var flest ældre undersøgt. Blandt 60-79 årige var således omkring 40-50% af alle undersøgt indenfor tidsrummet. Forekomsten af erkendt diabetes svarer til at 4,3 % af alle voksne mellem 20-79 år havde erkendt diabetes i Grønland. Forekomsten var lidt højere blandt kvinder (4,5%) end blandt mænd (4,1%). Forekomsten af forstadier til diabetes var 6,8 % af alle voksne i alderen 20-79 år – ligeledes med højere blandt kvinder.

Undersøgelsen viser således, at en meget stor del af befolkningen er undersøgt eller kontrolleret for diabetes indenfor en relativ kort periode, hvilket er et udtryk for at opmærksomheden på diabetes nu er meget høj i befolkningen og i sundhedsvæsenet. Samtidig er den fundne forekomst af diagnosticeret diabetes den højeste, som endnu er rapporteret fra Grønland, hvilket tyder på fortsat stigende forekomst af erkendt diabetes. Der er dog flest kvinder, som er undersøgt og diagnosticeret, og det må formodes at andelen af ikke erkendt diabetes er størst blandt mænd, hvilket er væsentligt at overveje i forbindelse med fremtidige diabetes initiativer.

RESEARCH

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High awareness of diabetes in the health care system in Greenland measured as a proportion of population tested with glycated haemoglobin within 2 years

Michael Lyng Pedersen^{1,2*}

Abstract

Background: Sixty years ago diabetes was almost non-existent in Greenland and until the beginning of this century awareness of diabetes was quite minimal. A high prevalence of undiagnosed diabetes has been reported in repeated population surveys. Increased focus on diabetes has been made a priority within the health care system since 2008, and in 2010 glycated haemoglobin was introduced as a diagnostic tool to further facilitate the diagnosis of diabetes.

Objective: The aim of this study was to estimate the age and gender specific use of glycated haemoglobin in 2014 and 2015, as an indicator of diagnostic activity and awareness of diabetes, and to estimate the prevalence of diagnosed pre-diabetes and diabetes among adults in Greenland aged 20–79 years of age.

Methods: The study was performed as an observational, cross sectional register study based on information gleaned from the electronically laboratory system used in Greenland including all patients tested with glycated haemoglobin at least once in 2014 or 2015.

Results: A total of 10,127 patients were tested with glycated haemoglobin in 2014 or 2015 corresponding to 18.1% of the whole population. Among adults aged 20–79 years 9506 patients were tested corresponding to 24.0% of the total adult population. More females (32.5%) than males (16.5%) aged 20–79 years old were tested ($p < 0.001$). The prevalence of diagnosed diabetes and high risk pre-diabetes among adults aged 20–79 years was 4.3 and 6.8% respectively.

Conclusion: In conclusion use of glycated haemoglobin is widely used in the health care system in Greenland indicating a high awareness of diabetes in the population and by the health care system. Still, awareness of undiagnosed diabetes remains an important issue and additional strategies targeting males under 70 years old must be considered.

Keywords: Diabetes, Glycated haemoglobin, Diagnosis, Prevalence

Background

Diabetes is a serious and increasing health challenge affecting in 2013 around 382 million people globally [1]. The number is projected to increase with approximately 55% to 592 million within the next 20 years [1, 2]. Nine percent of adults at or above 18 years old are affected by

diabetes [3]. Due to the often slow onset of symptoms for especially type 2 diabetes the condition may go undiagnosed for several years. Worldwide almost half of all diabetes cases (175 million people) remain undetected [2]. During the undiagnosed period, elevated blood glucose may lead to microvascular complications like neuropathy, nephropathy, retinopathy and macrovascular complications like ischemic heart disease, stroke and peripheral vascular disease [2, 4, 5]. The majority of both diagnosed and undiagnosed cases of diabetes are in low and middle income countries [1, 2].

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Discussion

Almost a fourth (24.0%) of the total adult population (20–79 years old) and almost a third (32.4%) of the adult females in Greenland had a HbA1c test performed within a 2 year observational period indicating high diagnostic activity in the health care system. More than half of all tested adult patients had pre-diabetes. The proportion of the population tested was higher for females than males. Accordingly, the prevalence of diagnosed diabetes and of high risk diabetes was higher among females than males (20–79 years old).

Strengths and limitations

The main strength of the present study is that it is the first study to describe diagnostic activity in all of Greenland. Also, the number of patients included in this study is larger than any study ever published before in Greenland on the prevalence of high risk pre-diabetes and diabetes. However, several limitations exist. Some towns outside Nuuk perform HbA1c test on patients with diabetes locally instead of using the central laboratory of Queen Ingrid Hospital. These test results were not included in this study. Thus, the number of patients tested and the number of patients with diabetes may have been underestimated in this study. However, most patients with diabetes experience at least once annually additional blood tests including HbA1c, blood lipids and electrolytes tested and performed at the central laboratory of Queen Ingrid Hospital. Thus, the size of the underestimations can be regarded as minimal. Only the most recent HbA1c measurements were included in this study which may lead to an overestimation of the prevalence of diagnosed diabetes since the diagnosis needs to be confirmed with an additional HbA1c test. On the other hand some patients actually diagnosed with diabetes may be treated medically and thus have HbA1c levels below 6.5% (48 mmol/mol) leading to an underestimation of the prevalence of diabetes. Yet, the guidelines used in Greenland suggest targeting a HbA1c value below 7.0% (53 mmol/mol), and the number of patients with diabetes and a most recent HbA1c below 6.5% (48 mmol/mol) are expected to be of less significance. Another limitation in the estimation the prevalence of diagnosed diabetes and high risk pre-diabetes is that the patients included cannot be expected to be completely representative of Greenland's population. Especially, the proportion of males examined is lower compared to females. Also, the patients tested with HbA1c may have increased risk factors for diabetes compared to the general population which would lead to an overestimation of the reported prevalence of diabetes. Thus, it can be expected that patients with overweight, obesity, hypertension, elevated blood lipids and other cardio-vascular symptoms would

be offered an HbA1c test from the health care professionals more often than patients without these risk factors. This would tend to towards an overestimation of the prevalence of diabetes.

Diagnostic activity

The proportion of patients (24.0%) tested with HbA1c in Greenland in the present study period is much higher than previously reported for the first 27 months after implementation of HbA1c as diagnostic tool in Greenland, indicating increased diagnostic activity. Thus, it was estimated that 13.6% of the population aged 35 years or above was tested during this study period [7]. Females were tested more often than males in the present study. This can be a consequence of gender specific differential use of health care service in Greenland. Thus, 90% of all females have been in contact annually with the health care system in Greenland compared to 76% of males [19]. In addition, all pregnant women in Greenland are routinely tested with HbA1c during the first trimester.

Prevalence of diabetes

The prevalence of diagnosed diabetes at 4.3% among adults 20–79 years old is higher than the most recent (2014) reported prevalence of diagnosed diabetes in Greenland at 2.5%. In 2014 the prevalence of diagnosed diabetes among adults aged 20–79 years old were reported to be around 2.5% [16]. This may indicate that the prevalence of diagnosed diabetes is still on the increase in Greenland. On the other hand the prevalence is still lower than reported in the most recent population survey performed in Greenland during 2014. A prevalence of diabetes among adults aged 18 or above at 6.7% based on elevated glycated haemoglobin (HbA1c) tests performed on 537 participants was reported [2]. Of those, 60% were aware of their diagnosis indicating a prevalence of diagnosed diabetes, around 4% (60 of 6.7%), which is very similar to the prevalence at 4.3% among adults aged 20–79 years old reported in the present study. A prevalence of undiagnosed diabetes at around 40% of all diabetes cases is lower than the global average of approximately 45% of undiagnosed diabetes [2]. However, despite high diagnostic activity in Greenland, undiagnosed diabetes remains an issue. Especially among males aged 40–70 years old, unawareness of diabetes may be present due to the lower proportion tested than from among females. The higher proportion of diagnosed diabetes and high risk pre-diabetes among females than males may partly be explained by the higher proportion of females tested partly because of the higher proportion of females with abdominal obesity among adult females compared to that of males in Greenland [20]. For both genders overweight and obesity have been increasing

within the last two decades and may contribute to the increasing prevalence of diagnosed diabetes observed in Greenland [13, 21–23].

The prevalence of diagnosed diabetes in Greenland reported in this study seems to be quite similar or even a bit lower than in the surrounding countries. According to the International Diabetes Federation the prevalence of diabetes among 20–79 aged people is 7.6% in Iceland, 7.4% on the Faroe Islands, 9.9% in Denmark, 9.5% in Canada and 12.8% in the United States. Of those, 27–38% remain undiagnosed [24–28].

In conclusion, HbA1c is widely used in the health care system in Greenland indicating a high awareness of the occurrence of diabetes in the population and a heightened awareness in the health care system, which may contribute to explaining the reported increase in the prevalence of diagnosed diabetes within the last few years. Still, awareness of undiagnosed diabetes remains an important issue, and additional strategies especially targeting males under 70 years old must be considered.

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Competing interests

The author declare no competing interests.

Ethics approval and consent to participate

The study was approved by the ethics committee for medical research in Greenland and The Agency for Health and Prevention in Greenland.

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Forskningsfremme Pulje 2016 - Bevilling (I) Michael Lyng Pedersen

På vegne af Naalakkersuisoq Nivi Olsen skal det meddeles, at Nunatsinni Ilisimatusarnermik Siunnersuisoqatigiit, Forskningsråds indstilling er tiltrådt projektet:

Diabetes i Grønland. Screenings aktivitet og forekomst af diabetes i Grønland 2014-2015

Ansøgningen støttes med Dkr. 75.000 kr. Det er en forudsætning for bevillingen, at resultater fra projektet afrapporteres til Namminersorlutik Oqartussat i en form, der muliggør formidling til den grønlandske offentlighed.

Det bevilligede udbetales når, Departementet for Uddannelse, Kultur, Forskning og Kirke har modtaget oplysningen om, hvem der skal administrere bevillingen og hvor pengene skal sendes til. Såfremt oplysninger om administration og bankkontonummer oplysninger ikke er i hænde senest 26. Maj, bortfalder bevillingen.

Der skal aflægges regnskab senest 4 måneder efter projektets afslutning, og der skal indleveres en rapport om resultaterne senest 6 måneder derefter, også i elektronisk form.

Det skal endvidere oplyses, at de støttede projekter bliver offentliggjort i en pressemeddelelse.

Inussiarnersumik inuulluaqqusilluta

Med venlig hilsen,

Steen Jeppson, Forskningssekretariatet

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Regnskab

Bevilget beløb:	75.000
Honorar rate 2016	15.000
Honar rate 2017	40.000
Indbetalt B-Skat	20.000
<u>Rest</u>	<u>0</u>

Konti og posteringer

Siden hentet 05.05.2017 15.24.02

Konto : 64711367118 GDM-Forskning

Dato	Tekst	Rente fra	Beløb	Saldo	Kategori
Michael Pedersen					
26.09.2016	✉ <u>Qv. u/kvit Forsknings bevilling</u>	26.09.2016	75.000,00	75.000,00	Andet
30.11.2016	<u>Standardovf. Frikøb</u>	30.11.2016	-15.000,00	60.000,00	Ikke kategoriseret
25.01.2017	<u>honorar</u>	25.01.2017	-40.000,00	20.000,00	Ikke kategoriseret
05.05.2017	<u>B-Skat 2017</u>	05.05.2017	-20.000,00	0,00	Ikke kategoriseret