

Vitamin D in Somali women living in Sweden

Akademisk avhandling

som för avläggande av medicine doktorsexamen vid Sahlgrenska akademien, Göteborgs universitet kommer att offentligens försvaras i Arvid Carlssons föreläsningssal, Academicum, Medicinaregatan 3, Göteborg,

fredagen den 26 oktober 2018, kl 9.00

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Avhandlingen baseras på följande delarbeten

- I. Osmancevic A, Demeke T, Gillstedt M, Angesjö E, Sinclair H, Abd El-Gawad G, Landin-Wilhelmsen K. 2016. Vitamin D Treatment in Somali Women Living in Sweden - Two randomized, placebo-controlled studies. *Clin Endocrinol (Oxf)*. 2016 May 7. doi: 10.1111/cen.13097. Epub 2016 Jun 2.
- II. Demeke T, El-Gawad GA, Osmancevic A, Gillstedt M, Landin-Wilhelmsen K. 2015. Lower bone mineral density in Somali women living in Sweden compared with African-Americans. *Arch Osteoporos*. 2015 Dec;10(1):208. doi: 10.1007/s11657-015-0208-5. Epub 2015 Feb 19.
- III. Demeke T, Gillstedt M, Osmancevic A, Krogstad A-L, Sinclair H, Angesjö E, Abd El-Gawad G, Landin-Wilhelmsen K. 2017. Vitamin D-binding protein in Somali women living in Sweden was low and unaffected by treatment. *J Prim Care Gen Pract* 2017 Vol 1, Issue 1, allied academics; 1-7.
- IV. Demeke T, Osmancevic A, Gillstedt M, Krogstad A-L, Angesjö E, Sinclair H, Abd El-Gawad G, Krantz E, Trimpou P, Landin-Wilhelmsen K. 2018. Comorbidity and Health related Quality of Life in Somali women living in Sweden. *Revised and resubmitted Scand J Prim Health Care*

**SAHLGRENKA AKADEMIN
INSTITUTIONEN FÖR MEDICIN**



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Abstract

Introduction: Sunlight is the major source of vitamin D synthesis. Information regarding vitamin D, bone status and general health in Somali women at latitude 0-10° North now living in Sweden at 57° North, is limited. Vitamin D-binding protein (DBP) is the major carrier of most vitamin D metabolites. It is not clear whether the amount of DBP is genetically determined or influenced by external factors.

Aims: To characterize vitamin D status, the effect of vitamin D treatment and possible comorbidity in Somali women living in Sweden.

Methods: Somali women (n = 114), age range 18-56 years, residing in Sweden for at least 2 years (range 2-23) were recruited on a voluntary basis. They were randomized to different treatment arms, vitamin D drops 800 IU, 1600 IU or placebo daily, and UVB light or Woods lamp (placebo light). Blood samples were collected at start and every six weeks during the intervention (three months) and the follow-up period (three months). Bone Mineral Density (BMD) and Health Related Quality of Life (HRQoL) were examined. A random population sample from the WHO MONICA study, Gothenburg, was used as controls.

Results: Vitamin D deficiency; *i.e.*, serum (S)-25(OH)D < 25 nmol/l, was found in 73% of the Somali women. S-25(OH) D increased dose dependently compared with placebo. At least 1600 IU of vitamin D3 daily was needed to raise the levels of S-25(OH)D to a sufficient range (\geq 50 nmol/l). S-DBP was lower in Somali women than in native Swedish women, < 2% of whom had vitamin D deficiency. There was a positive correlation between S-25(OH) D and S-DBP values in Swedish women. S-DBP was not affected by age or sex, and not by vitamin D treatment in the Somali women.

The Somali women had lower lumbar BMD values than white American women and both lumbar and femoral BMD were lower than in African-American women, using the reference provided by the dual energy X-ray absorptiometry manufacturer. Comorbidity, such as hypothyroidism, diabetes mellitus, vitamin B12 deficiency and hypertension, was similar in Somali women and native Swedes. However, the use of allergy medication was higher, fractures and HRQoL, especially the physical component, were lower than in native Swedish women.

Conclusion: Vitamin D deficiency was common, 73%, in Somali women living in Sweden. Vitamin DBP and BMD were lower than in controls but fractures were rare. S-DBP was unaffected by vitamin D treatment. At least 1600 IU vitamin D per day was needed to reach sufficient levels of S-25(OH)D. It is important to follow the Somali population at northern latitudes in order to prevent osteomalacia.

Keywords: Somali women, vitamin D status, bone mineral density, vitamin D-binding protein, comorbidity, vitamin D treatment