

Diseases in the Hip - Exploring risk for fracture and osteoarthritis

Akademisk avhandling

Som för avläggande av medicine doktorsexamen vid Sahlgrenska akademien, Göteborgs universitet kommer att offentligen försvaras i hörsal Arvid Carlsson, Academicum, Medicinaregatan 3, Göteborg, fredagen den 11 oktober, klockan 13.00

av Cecilie Hongslo Vala

Fakultetsopponent: Professor Haakon Meyer
Universitetet i Oslo, Norge

Avhandlingen baseras på följande delarbeten:

- I. **C.H. Vala**, A. Odén, M. Lorentzon, V. Sundh, H. Johansson, M. Karlsson, B. Rosengren, C. Ohlsson, B. Johansson, J. Kanis, D. Mellström. Increased risk of hip fracture among spouses- evidence of a homogamy effect. *Osteoporosis International* 2017 Jan;28(1):95-102
- II. H. Johansson, **C. Hongslo Vala**, A. Odén, M. Lorentzon, E. McCloskey, J.A. Kanis, N.C. Harvey, C. Ohlsson, S. Lohmander, J. Kärrholm, D. Mellström. Low risk for hip fracture and high risk for hip arthroplasty due to osteoarthritis among Swedish farmers. *Osteoporosis International*. 2018 Mar;29(3):741-749.
- III. **C. H. Vala**, J. Kärrholm, J.A. Kanis, H. Johansson, S. Sten, V. Sundh, M. Karlsson, M. Lorentzon, D. Mellström. Risk for hip fracture before and after total knee replacement in Sweden. *Submitted manuscript*
- IV. **C.H. Vala**, M. Lorentzon, V. Sundh, H. Johansson, C. Lewerin, S. Sten, M. Karlsson, C. Ohlsson, B. Johansson, J.A. Kanis, D. Mellström. Increased risk for hip fracture after death of spouse- further support for bereavement frailty? *Submitted manuscript*.

Diseases in the Hip

Exploring risk for fracture and osteoarthritis

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Abstract

Objective: Hip fracture is the most serious condition linked to low bone mass or osteoporosis, and Sweden has one of the highest incidences in the world. The proportion of elderly is increasing in Sweden and in the world, and with increased age increases the incidence for fragility fracture and osteoarthritis. We therefore aimed to expand knowledge about risk factors for hip fracture and osteoarthritis.

Methods: All studies in this thesis were based on the entire Swedish Population born 1902 to 1952 (n=4,546,820). In the Paper I we focused on all married couples (n=904,451), in Paper II on farmers (n=97,136), in Paper III on women and men with total knee replacement (TKR) (n=39,291), and in Paper IV we focused on widows and widowers (n=558,950). Statistics concerning risk factors were calculated with Poisson regression models.

Results: The risk of hip fracture was higher after hip fracture in a spouse, after total knee replacement, and after the death of a spouse, compared to non-exposed. Women and men combined had an increased risk for trochanteric fracture after total knee replacement. Male farmers had a decreased risk for hip fracture, and both female and male farmers had an increased risk for total hip replacement.

Conclusion: A previous hip fracture in spouse increased the risk for hip fracture in women and men, probably due to shared lifestyle and environment. Farming seemed to protect against hip fracture, but instead increase the risk of total hip replacement, probably due to heavy loading. The higher risk for hip fracture after total knee replacement might be explained by reduced mobility, pain, low bone mass, and changed kinematics. The risk for hip fracture also increased after the death of a spouse, which might be explained by the high stress levels due to grief.

Keywords: Hip fracture, femoral neck fracture, trochanteric fracture, osteoporosis, osteoarthritis, total hip replacement, total knee replacement, farmers, homogamy, assortative mating, bereavement