

# LIFE STYLE INTERVENTION IN PRIMARY CARE AND ASPECTS ON STROKE PREVENTION

Akademisk avhandling

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This thesis is based on the following studies, referred to in the text by their Roman numerals.

- I. Blomstrand A, Lindqvist P, Enocsson Carlsson I, Pedersen N & Bengtsson C.  
Low-budget method for lifestyle improvement in primary care.  
*Experiences from the Göteborg Health Profile Project.*  
Scandinavian Journal of Primary Health Care 2005; 23: 82-87.
- II. Blomstrand A, Ariai N, Baar A-C, Finbom-Forsgren B-M, Thorn J, Björkelund C.  
Implementation of a low-budget, lifestyle-improvement method in an ordinary primary  
healthcare setting: a stepwise intervention study.  
BMJ Open 2012; 00:e001154.
- III. Blomstrand A, Björkelund C, Ariai N, Lissner L & Bengtsson C.  
Effects of leisure-time physical activity on well-being among women: a 32-year  
perspective.  
Scandinavian Journal of Public Health 2009; 37: 706-712
- IV. Blomstrand A, Blomstrand C, Ariai N, Bengtsson C, Björkelund C.  
Stroke incidence and association with risk factors in women – a 32-year  
follow-up of the *Prospective Population Study of Women in Gothenburg.*  
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## ABSTRACT

**Aims:** To describe a self-administered preventive tool dealing with risk factors for cardiovascular disease and its effectiveness to engage persons in need of lifestyle changes. To evaluate the feasibility of implementing a preventive primary care program consisting of a screening tool and a self-administered health profile. To engage motivated individuals in need of lifestyle changes and to evaluate the effects after 1 year. To explore potential effects of physical activity on well-being among women, within a 32- year perspective. To study the incidence of first ever non-fatal and fatal stroke over a 32- year period with focus on stroke subtype, by consolidating endpoints, and associations with risk factors.

**Method:** A model for structured preventive work in primary care was developed and tested at a public primary care center (PCC). The model included a screening questionnaire offered to consecutive patients between 18-65 years of age followed by a self-administered health profile and follow-up. Subsequently, an intervention study was implemented in eight PCCs. Patients aged 18-79 years were presented with the tool, and then offered a health profile, a blood pressure (BP) and blood glucose check and a health dialogue. Main outcome measures were motivation level and change of lifestyle factors and BP, p-glucose, and body mass index (BMI) at 1-year follow-up. In the Population Study of Women in Gothenburg (PSWG) with 1 462 women, cross-sectional and prospective analyses were conducted concerning physical activity and well-being. In PSWG, main types of first-ever stroke and fatal stroke were identified and validated. Association with stroke and selected risk factors at baseline (smoking, physical inactivity, BMI, waist hip ratio (WHR), BP, perceived mental stress and low education) was tested. Association with atrial fibrillation (AF), diabetes, myocardial infarction and baseline hypertension was studied as survival time free from stroke.

**Results:** Subjects with less favorable lifestyle and higher motivation chose to participate. Good agreement was seen between screening tool and grading in the basal health profile (I). At 1-year follow-up significant reductions in BMI, WHR, waist circumference, BP and p-glucose were observed (II). Cross sectional analyses revealed strong associations between level of physical activity and well-being. Similar associations were observed when relating physical activity level at baseline to subsequent well-being after 12, 24 and 32- years. Changes in the individual's physical activity level and simultaneous changes in experience of well-being were correlated (III). Follow-up yielded 184 (12.6%) cases of first ever stroke, 18% of them fatal. The validation process reduced unspecified stroke diagnosis from 37% to 11%. Significant association with ischemic stroke was seen for high BMI, smoking and low education. Survival analysis showed significant higher risk of stroke in contemporary diabetes, atrial fibrillation and baseline hypertension but not myocardial infarction. (IV).

**Conclusions:** A pedagogic model engaging motivated individuals was feasible to implement in ordinary primary care. Several risk factors were significantly improved after one year suggesting applicability in lifestyle modification. Strong associations were seen between physical activity level and reported well-being, both cross-sectionally and prospectively. Increased physical activity in sedentary individuals appears to promote perceived health and well-being. By specifying diagnoses 32-year stroke data quality was improved. Low education was associated with ischemic stroke. Smoking, obesity, atrial fibrillation, diabetes and hypertension were associated with higher stroke risk.

**Keywords:** Life style, prevention, promotion, risk factors, primary health care, health profile, public health, self-reported health, wellbeing, stroke, incidence, women.

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