A close-up photograph of a doctor's hands using a stethoscope to listen to a patient's chest. The patient is wearing a dark t-shirt. The doctor's hands are visible, with one hand holding the stethoscope's chest piece against the patient's skin. The background is slightly blurred, showing what appears to be a hospital or clinic setting.

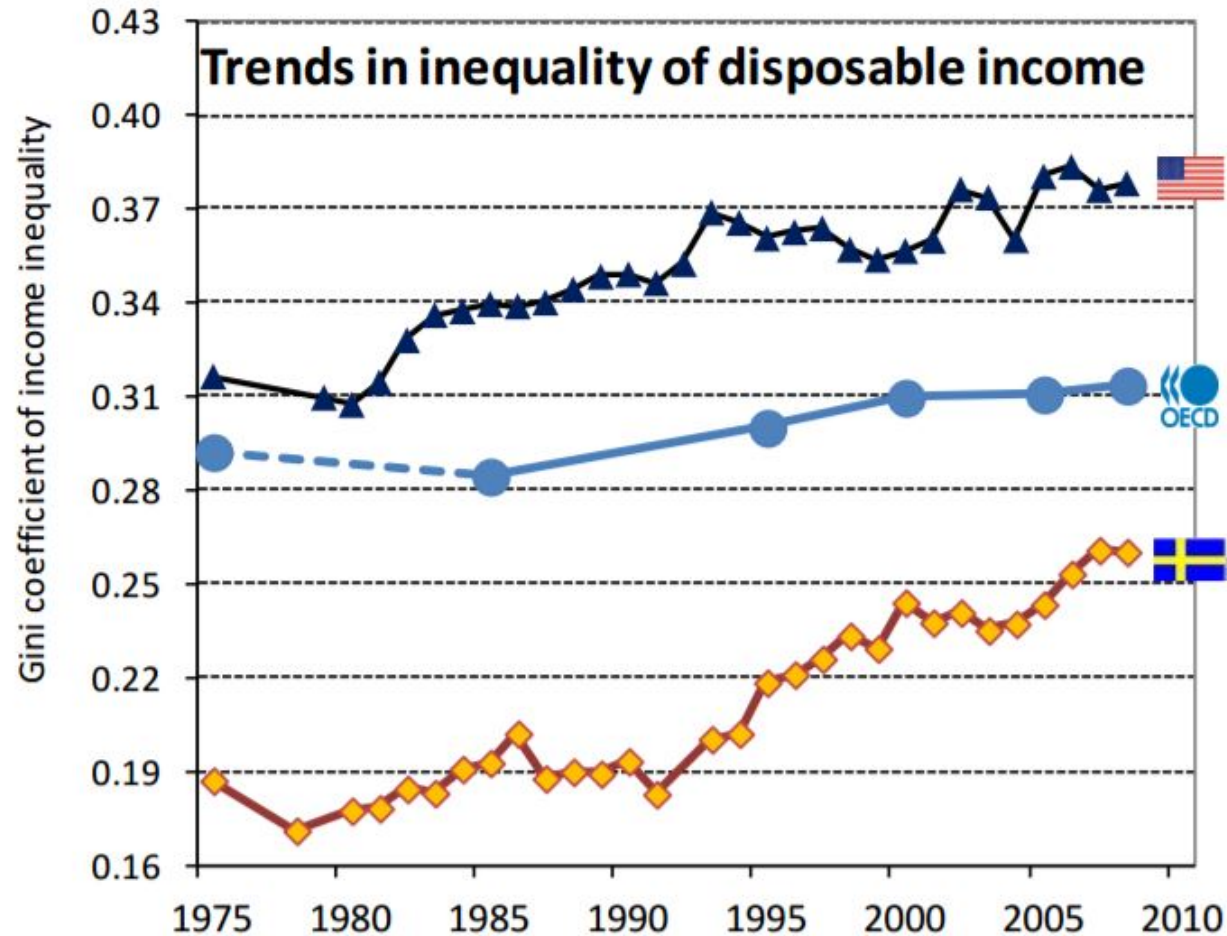
Early signs of cardiovascular
risks
in teenagers
- the prospective ABIS-study

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AIM OF THE STUDY

Could we find traces of early cardiovascular risks related to socioeconomic status among teenagers even in a more equal society like Sweden?

Economic inequalities in Sweden



OECD (2011),
Divided We Stand:
Why Inequality
Keeps Rising

Cardiovascular diseases (heart infarction)
have declined recent decade in Sweden (western world) –
But, social inequalities is still most evident
for cardiovascular diseases

Basic assumption that cardiovascular risk factors in childhood
(BMI, lipids and blood pressure) might increase the risk of
cardiac diseases later in life

(For example, changes in arterial blood vessels thickening
occur already before the age of 30)

We don't measure blood pressure on children or teenagers in daily clinical practice....



Data

The ABIS Study - All Babies in Southeast Sweden

A major Prospective population-based study of almost 17.000 children followed from birth an onwards (now 18-20 years old) regularly follow-ups of questionnaire and clinical data.

Aimed initially to examine the etiology of Type 1 Diabetes and other autoimmune diseases, but we have also wider perspectives...



Study design

A subsample (n=298) of young adults (15-17 years old) from a defined region in the ABIS-study was examined.

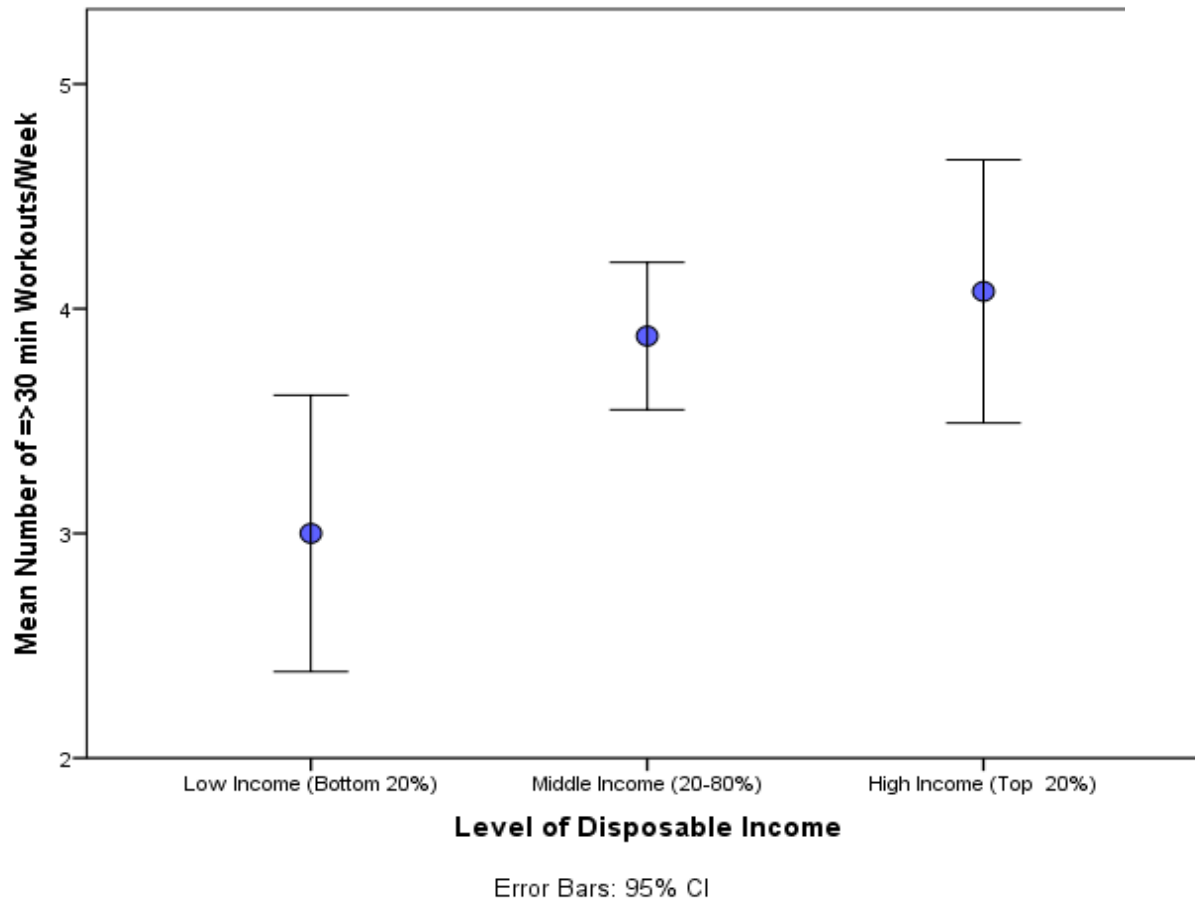
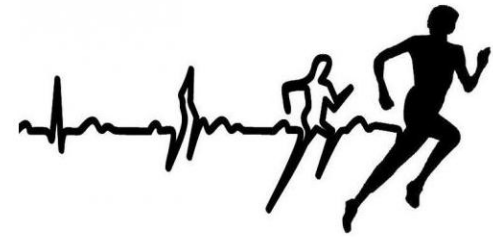
Our research nurses examined them at their schools.

A set of biological markers (cardiovascular risk markers) was measured and questionnaires covering socioeconomic and psychosocial conditions was collected.

Socioeconomic factors measured

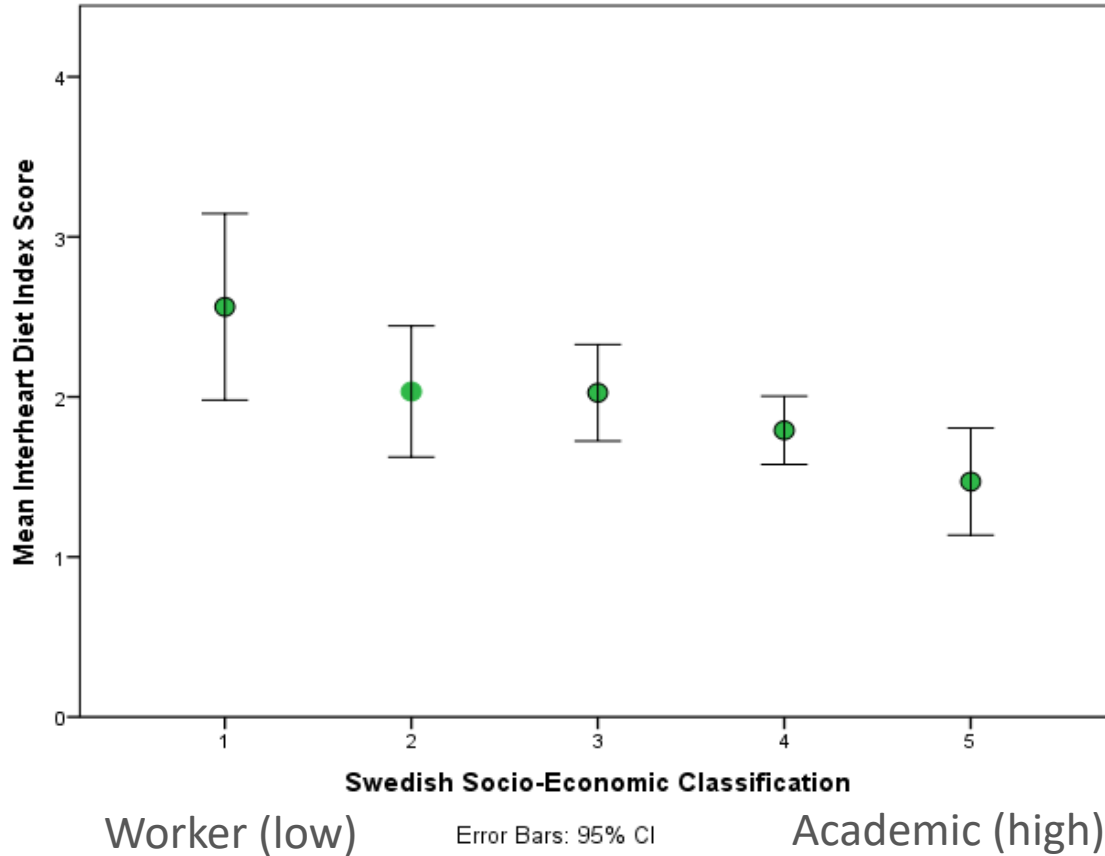
- **Swedish official socioeconomic classification (5-grade: 1=workers/low to 5=academic/high)**
- **Mother educational level (low/medium/high)**
- **Level of Disposable Household income after taxation and social benefits (20%low / 60%middle / 20%high)**

Weekly physical activity



Nutritional habits

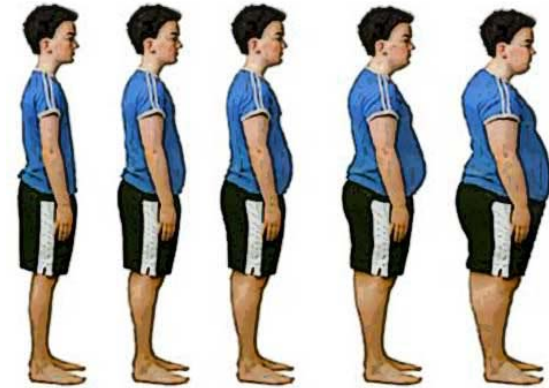
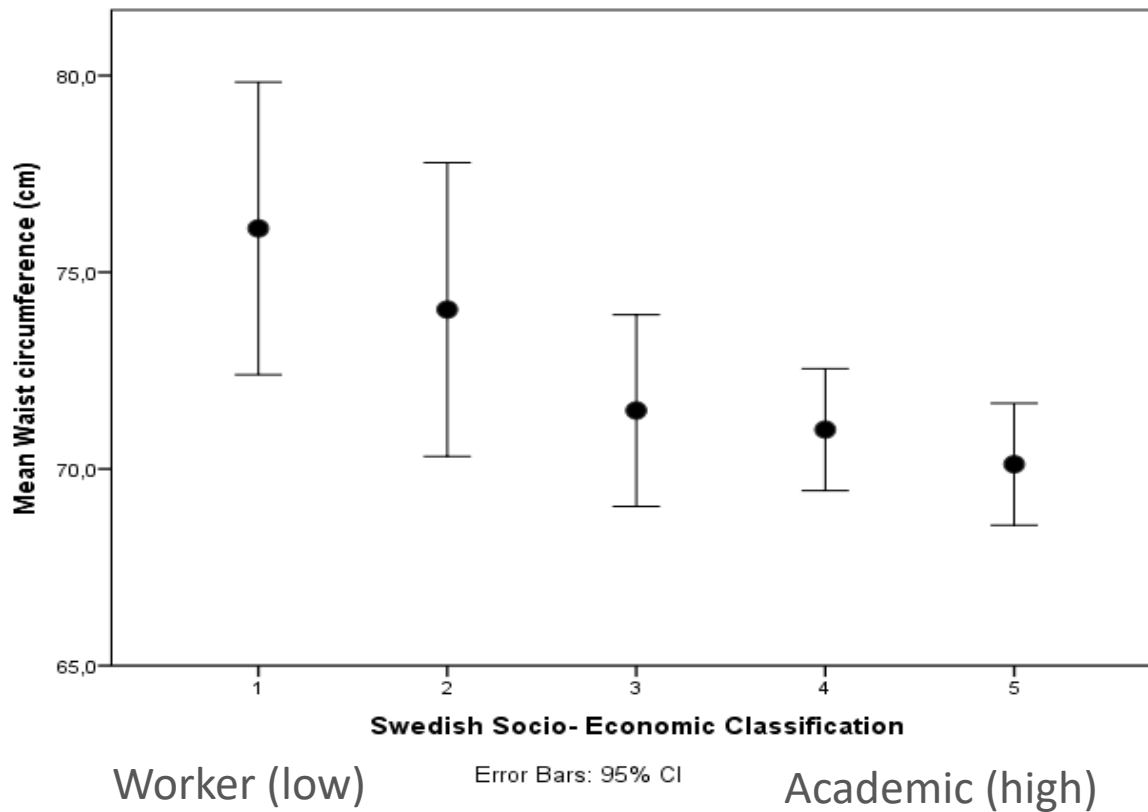
The INTERHEART Study
Modifiable Risk Score
(higher score - higher risk)



- Low Fruit consumption
- Low Vegetable consumption
- High Meat consumption
- Salty foods
- Often Fast food

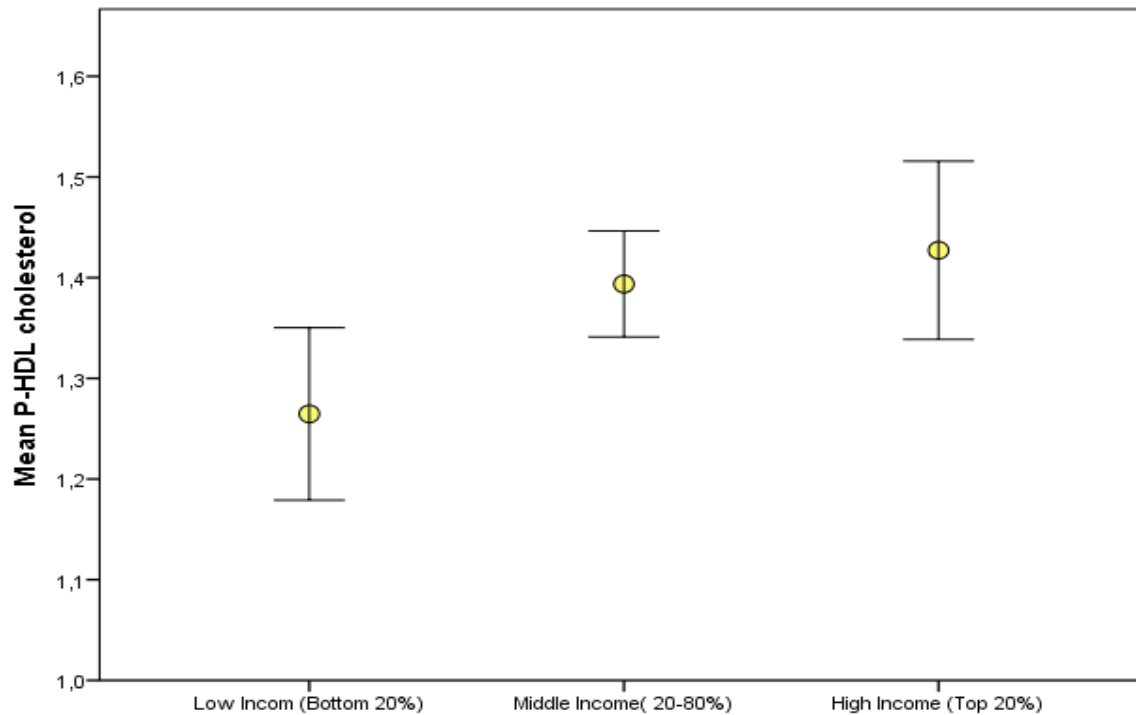


Waist Circumference



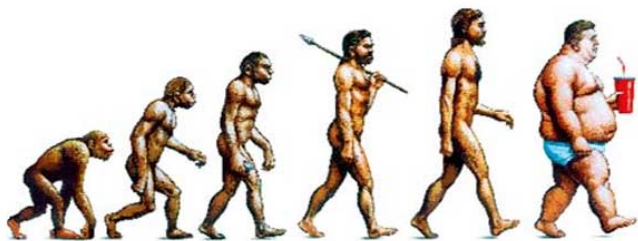
Disposable Household Income and HDL

(the good cholesterol)

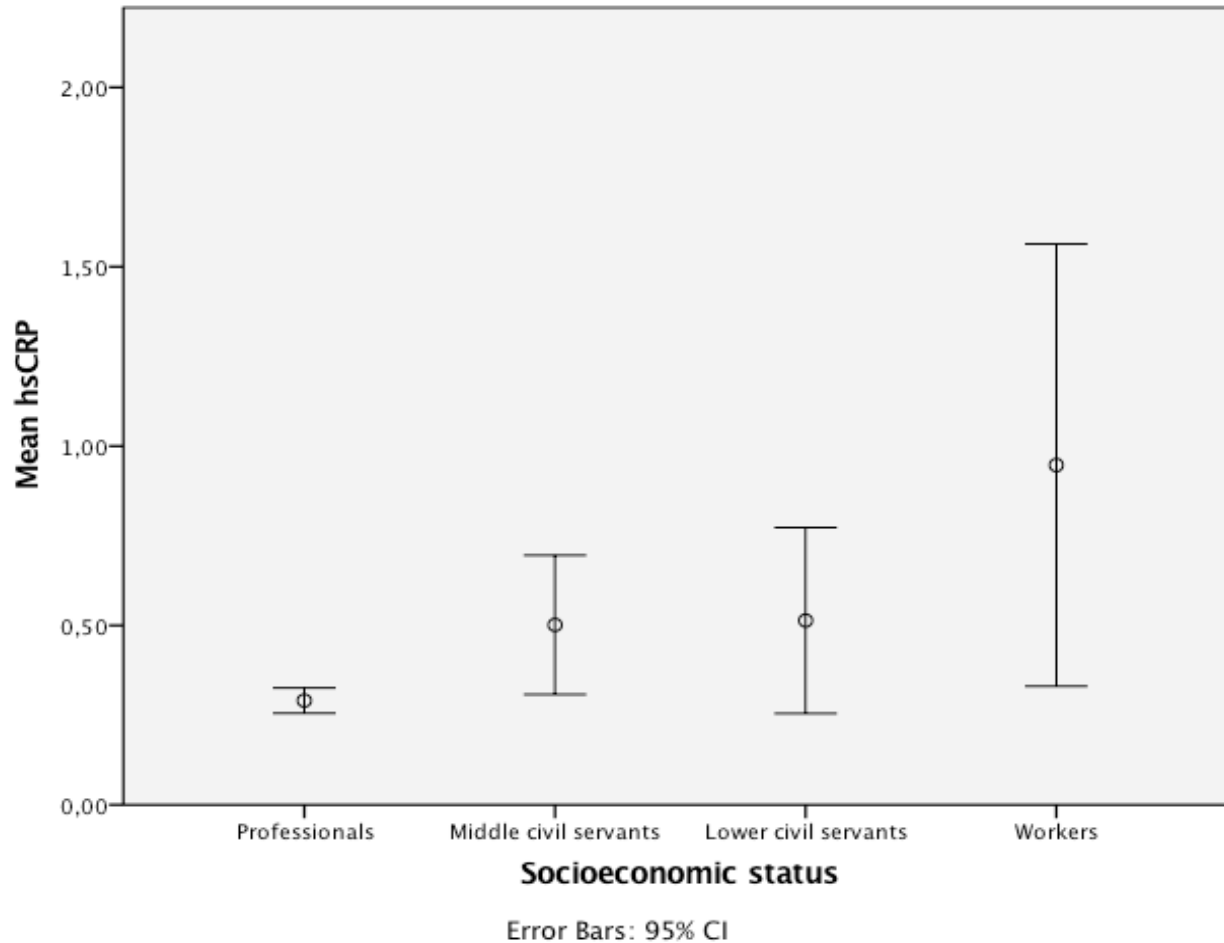


Level of Disposable Income

Error Bars: 95% CI



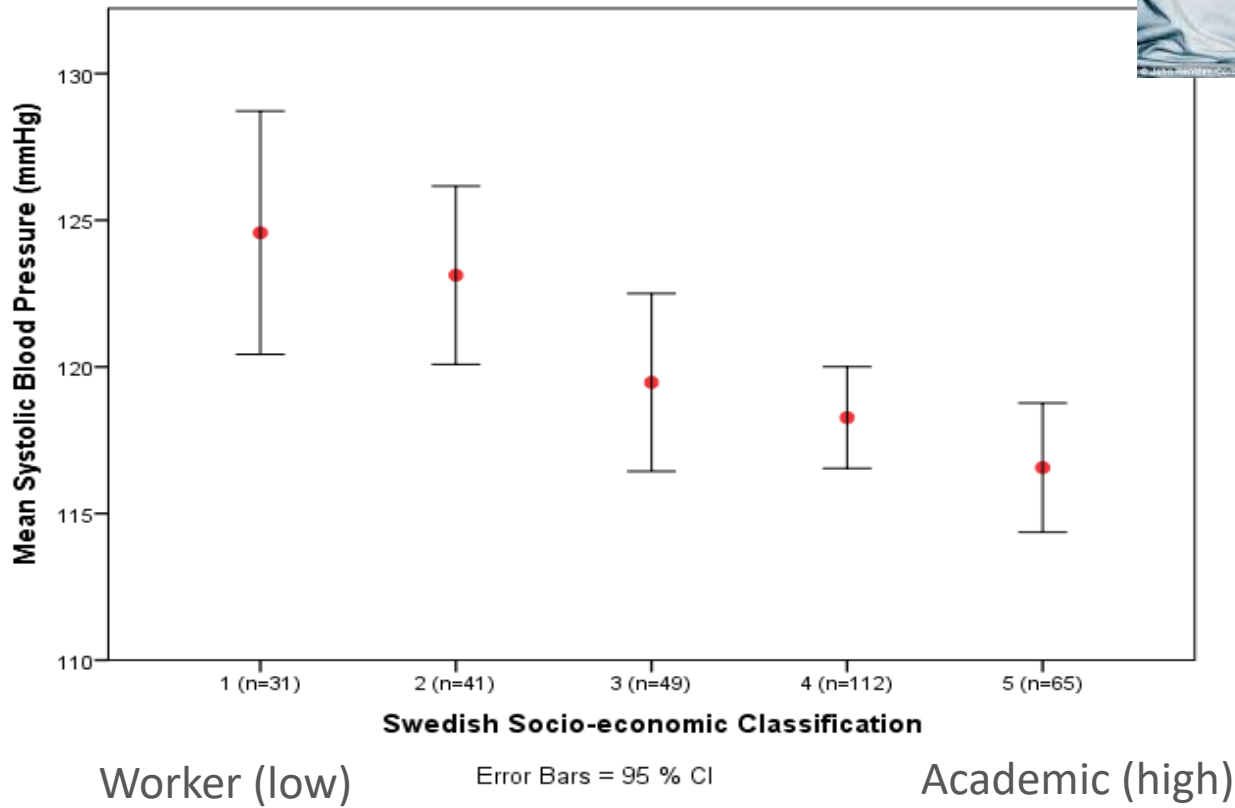
SES and low grade inflammation hsCRP



Systolic Blood Pressure



Socioeconomic Status and Systolic Blood Pressure



Adjusted for Gender and Waist Circumference

Conclusions:

We found differences in Cardiovascular risk factors among Swedish teenagers in relation to Socioeconomic position, household income and maternal education

- **Less physical active**
- **Worse dietary habits**
- **Higher waist circumference**
- **Lower HDL-cholesterol**
- **Low grade inflammation**
- **Higher systolic blood pressure**

However
Most of these differences are preventable

Obesity prevention must be improved
Blood pressure should be recognized
when working clinically with teenagers
especially among the Low SES groups

Material factors and Stress exposure?

Going further..

Intergenerational analysis of cardiovascular risks over three generations.

Epigenetics





Many thanks!