

**Gender and health in a  
changing society:  
Follow-up of the Hungarian  
Epidemiological Panel**

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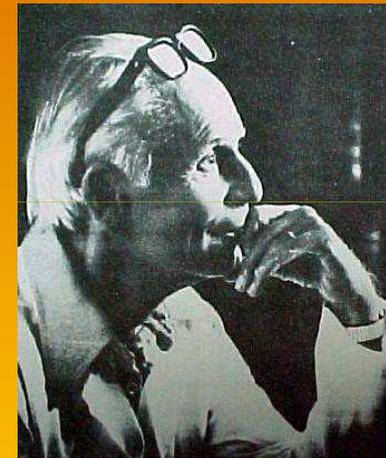
**European Association for Consultation-Liaison  
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# Central-Eastern European legacy of psychosomatic medicine

In the twentieth century, Hungarian born scientists, such as

- Sándor Ferenczi,
- Franz Alexander,
- Michael Bálint,
- Hans Selye,



significantly contributed to establishing the foundations of psychosomatic attitude in medicine.

- During the communist period psychology was regarded ideologically incorrect, there was no psychology education at the Hungarian universities.

# General adaptation of Theory of János Selye

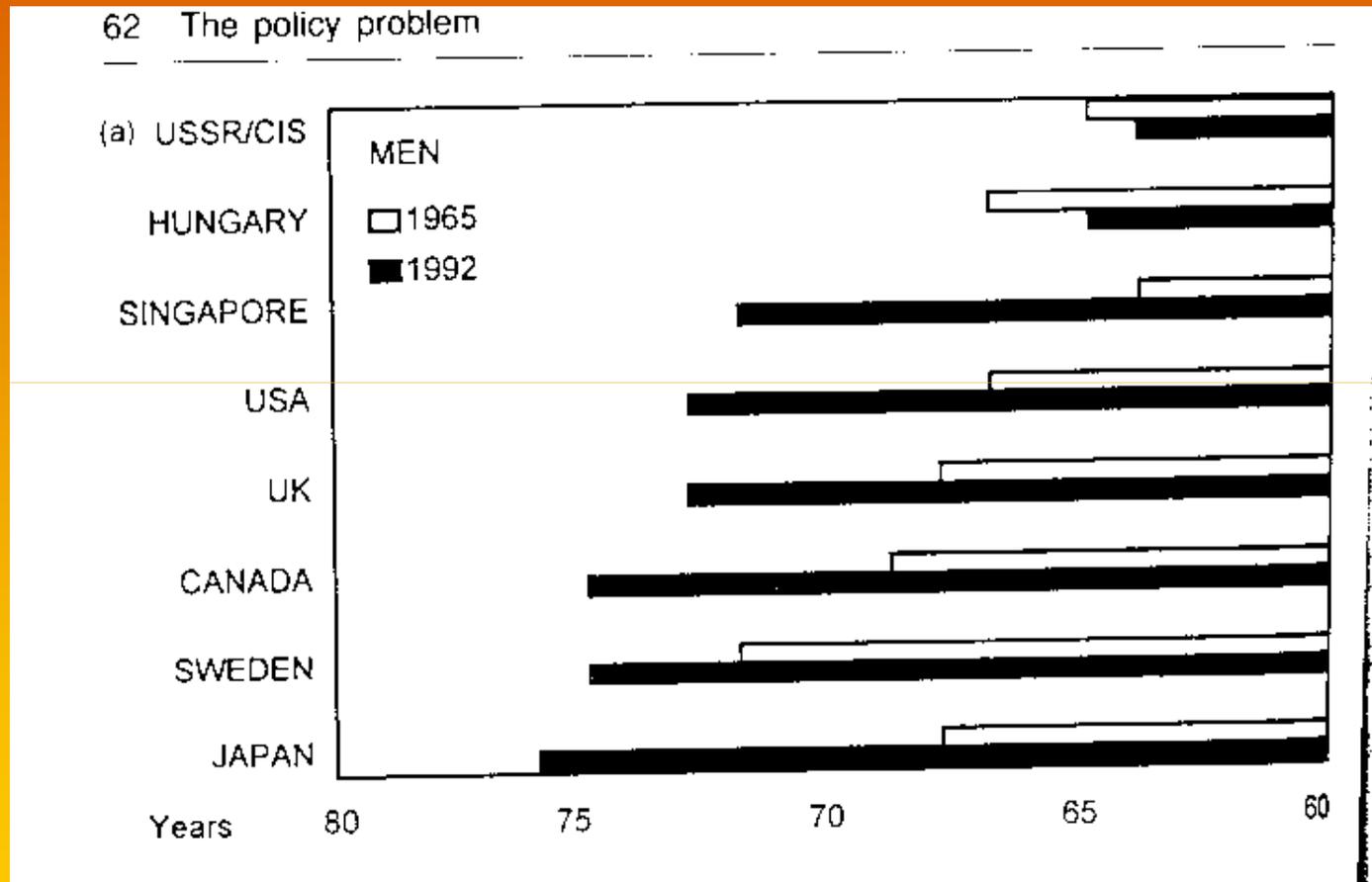
- The three phases of stress:
  - alarm reaction,
  - resistance phase and,
  - the physiologically most harmful phase, exhaustion, **chronic stress!**
- During the socio-economic transition the most important public health burden is connected to chronic stress in Hungary.

# Chronic stress in Selye's laboratory

- In the chronically stressed animals fatal consequences occurred:
  - immunological
  - cardiovascular
  - gastroenterological collapse and death
- The difference between animal and human stress process:
  - central importance of society and the subjective evaluation of the situations



# Life expectancy of men in 1965 and 1992

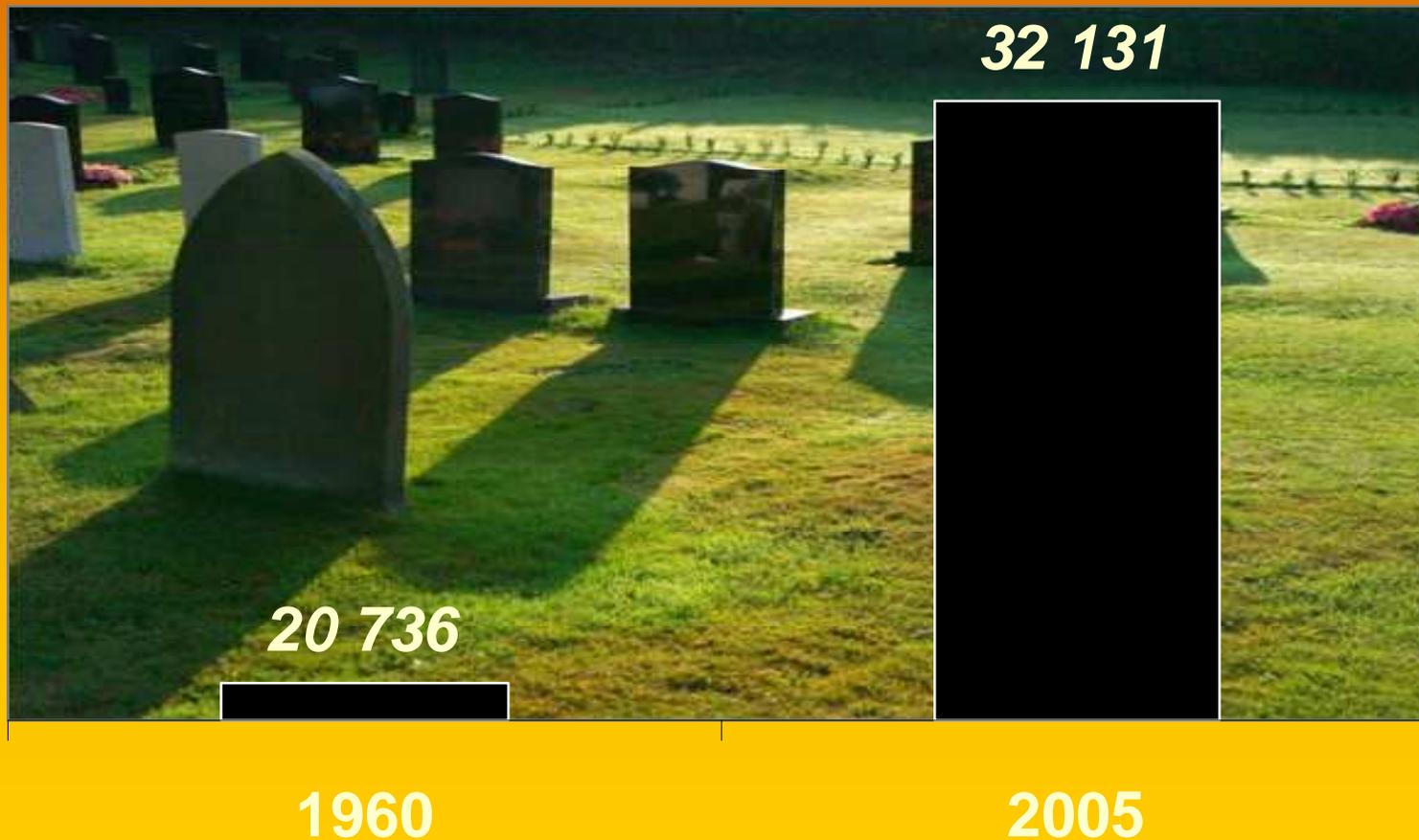


Marmot M : The social pattern of health and disease In. Health and Social Organization, Edited by D Blane, E Brunner, R Wilkinson

# Chronic stress as a public health risk on population level

- In the last decades in the transforming societies of Central and Eastern Europe (CEE) premature mortality increased dramatically, first of all among men.
- The mortality rate for 1000 men was 12.2 in 1960 and 16.2 in 2005, it increased by 33 %.
- Among women it decreased from 9.6 to 7.8 pro 1000 women.
- It means that in 2005 11.395 more men deceased from this age group in Hungary, than in 1960. (20.736 men in 1960, 32.131 men in 2005).

**11.395 more men died from the  
40-69 age group in 2005 than in  
1960!**



# Trends in other CEE countries

- Similar trends in Poland and in Czech Republic, but improvement had started much earlier and it is more considerable.
- Dramatic health crisis in Russia, Ukraine, in the Baltic countries and Hungary.
- What can explain these differences?

# Morbidity and mortality crisis in the transforming societies

This morbidity and mortality crisis of the transforming Central and Eastern European countries is an extraordinary natural experiment to understand better the importance of psychosocial factors in health **because** the existing explanatory models are not able to explain these gender differences and these rapid changes in the health status of our populations.

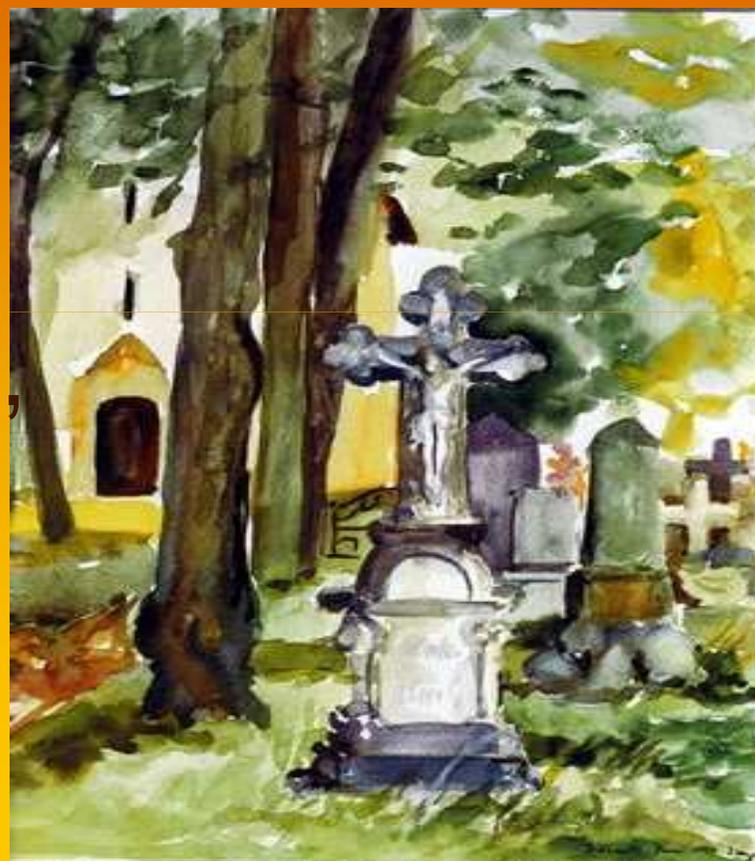
## **What can explain the opposite changes in East-West life expectancy?**

- **In the 1960s no differences in Austrian and Hungarian life expectancy**
- **Life expectancy in Hungary in 2009:**
  - **Male 70, female 78 years,**
- **Life expectancy in Austria:**
  - **Male 77 - they live 7 years longer,**
  - **Female 83 - they live 5 years longer**

# Mortality rates in 15-60 years old male population

OECD 2009:

- Sweden 7,8%,
- Austria 10,5%,
- Czech Republic 14,8%,
- Poland 20,9%,
- Bulgaria 21,9%,
- **Hungary 24,9%,**
- **Russia 43.2%**



# Possible explanations

- This deterioration cannot be ascribed to deficiencies in health care **because** during these years there was a significant decrease in infant and old age mortality.
- Between 1960 and 1989 there was a constant increase in the gross domestic product in Hungary. Worsening material situation cannot be the explanation.
- Genetic factors cannot explain such a rapid change in middle aged mortality.

# Paradoxical features of health crisis in Hungary

- In the 1960s the mortality rates were better in Hungary than in some Western-European countries.
- Since the late 1980s, the mortality rates among 45-64 year old men in Hungary have risen to higher levels than they were in the 1930s.
- There are large gender differences in mortality rates.
- Relatively better life expectancy above 70.

# Gender differences

- Although men and women share the same socio-economic circumstances, there are significant gender differences in worsening mortality rates.
- What is the explanation for the increased vulnerability of middle aged men during this period of rapid economic change?

# Key Research Question

What can explain, that the female/male life expectancy difference is very high

- in Russia (11 years) and
- in Hungary (8 years)?

While in some countries, i.e.

- Netherlands (4 years) and
- Norway (5 years)

there are much lower female/male differences in life expectancy?

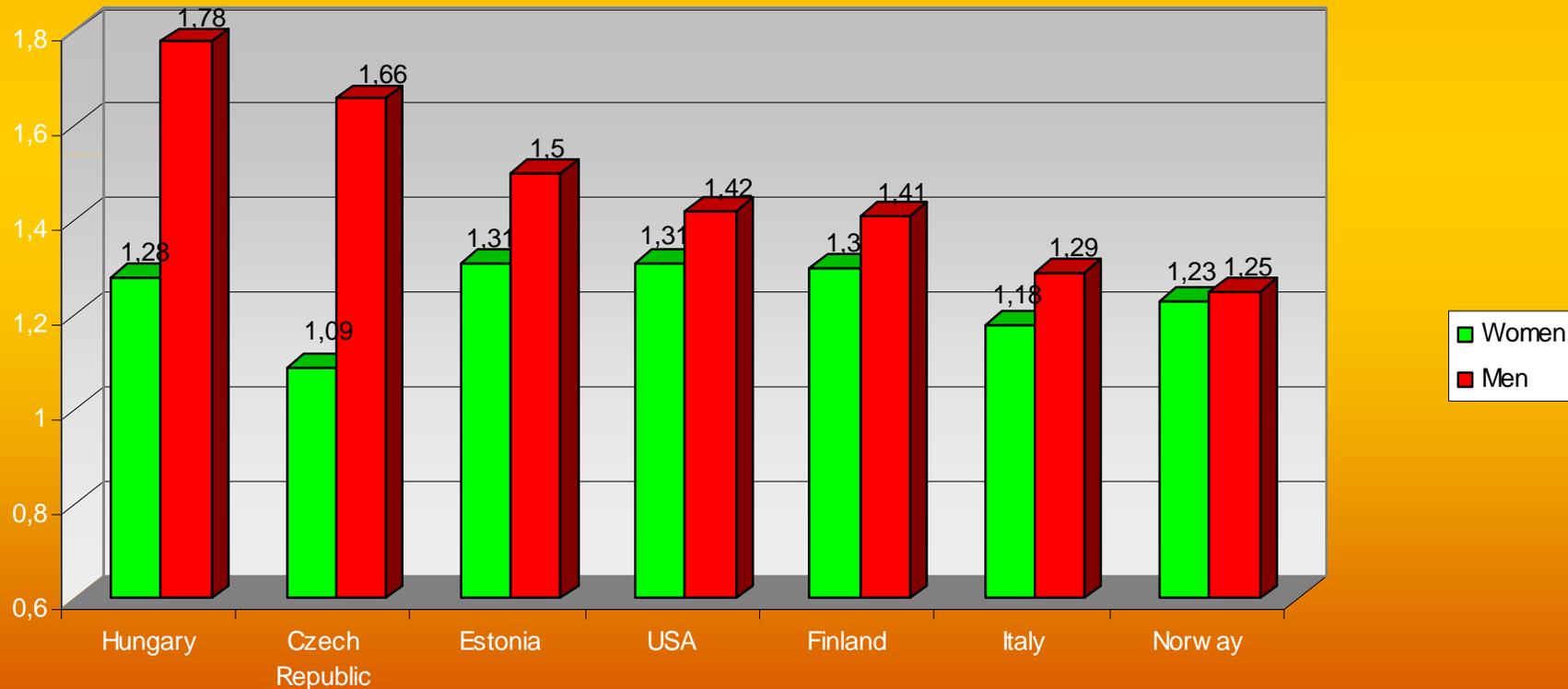


# Background

- Gender differences in premature mortality rates and in the size of socioeconomic inequities in mortality vary across countries.
- Social inequalities in mortality are small in some countries from Southern Europe and very large in most of the Eastern European and Baltic states.
- Gender differences in the size of socioeconomic inequalities in mortality vary considerably across European countries, from almost none in Norway to huge differences in Hungary.

# Aggregate mortality according to low versus high education (Mackenbach et al, 1999)

All Causes mortality



# Purposes of the study

We aimed

- to quantify the gender differences in the association between socioeconomic status (SES) and premature mortality and
- to analyse which psychosocial characteristics might mediate between SES and mortality among men and women separately in the Hungarian population.

# Methods

- In 2002, 12 640 persons participated in the Hungarostudy 2002, the baseline survey, which was representative for the Hungarian population aged above 18 years according to gender, age and 150 sub-regions.
- Men (n=1130) and women (n=1529), aged 40-69 years, participants in the Hungarian Epidemiological Panel (2002) were followed for 3.5 years for total mortality.
- During the follow-up, 99 men (8.8%) and 53 women (3.5%) died. Cox-proportional hazard models were used to evaluate the association between several socioeconomic and psychosocial measures and death.

# Socio-economic and demographic measures

- Education
- Income, family income
- Subjective socioeconomic status
- Subjective poverty
- Access to car
- Access to personal computer
- Marital status
- Chicago collective efficacy score
- Family environment
- Housing environment
- Childhood experiences
- Self-rated socioeconomic changes

# Self-rated health

- Self-rated disability
- Self-rated health
- Treatment because of 25 types of disorders
- Illness intrusiveness
- Self-rated pain
- Sleep complaints
- Health care related needs



# Mental health indicators

- **Shortened Beck Depression Score**
- **WHO Wellbeing (Bech, 1996)**
- **within WHO cheerfulness**
- **Shortened Hopelessness Score (Beck, 2000)**
- **Hospital Anxiety Score (HAS)**
- **Vital exhaustion (Appels, 1988)**
- **Type D Personality (Dennolet, 2000)**
- **that is Negative affect (NA) and**
- **Behavioral inhibition (BI)**

# Work stress measures

- Job security (Rahe, Tolles, 2002)
- Control at work (Kopp et al, 2000)
- Dissatisfaction with work and with boss (Rahe, Tolles, 2002)
- Occupational troubles in the last 5 years (Rahe, Tolles, 2002)
- Social support at work (Kopp et al, 2000)
- The number of working hours per weekdays and on weekend days
- Personal and family income
- Employment status

# Further psychosocial indicators

- Perceived social support (Caldwell, 1987)
- Anomie-inability for long term planning Eurobarometer study
- Self-efficacy score (Schwarzer, 1992)
- Meaning in life (R. Rahe, 2002)
- Shortened hostility score (Cook-Medley, 1954)
- Purposes in Life (Crumbaugh, Maholick, 1964)
- Shortened ways of coping (Folkman, Lazarus, 1980)
- Stress and coping (Rahe, 2002)
- Dysfunctional attitude score (Weissman, 1979)
- Life events (Rahe, 2002)
- Marital stress score
- Social capital measures
- TCI shortened cooperativeness and sensation seeking
- Womens' health
- Ethnic identity
- Religious involvement

# Health behaviour and lifestyle factors

- Smoking history
- Suicidal behaviour
- Sport – regular physical activity
- Body weight and height – BMI



## Alcohol abuse (AUDIT):

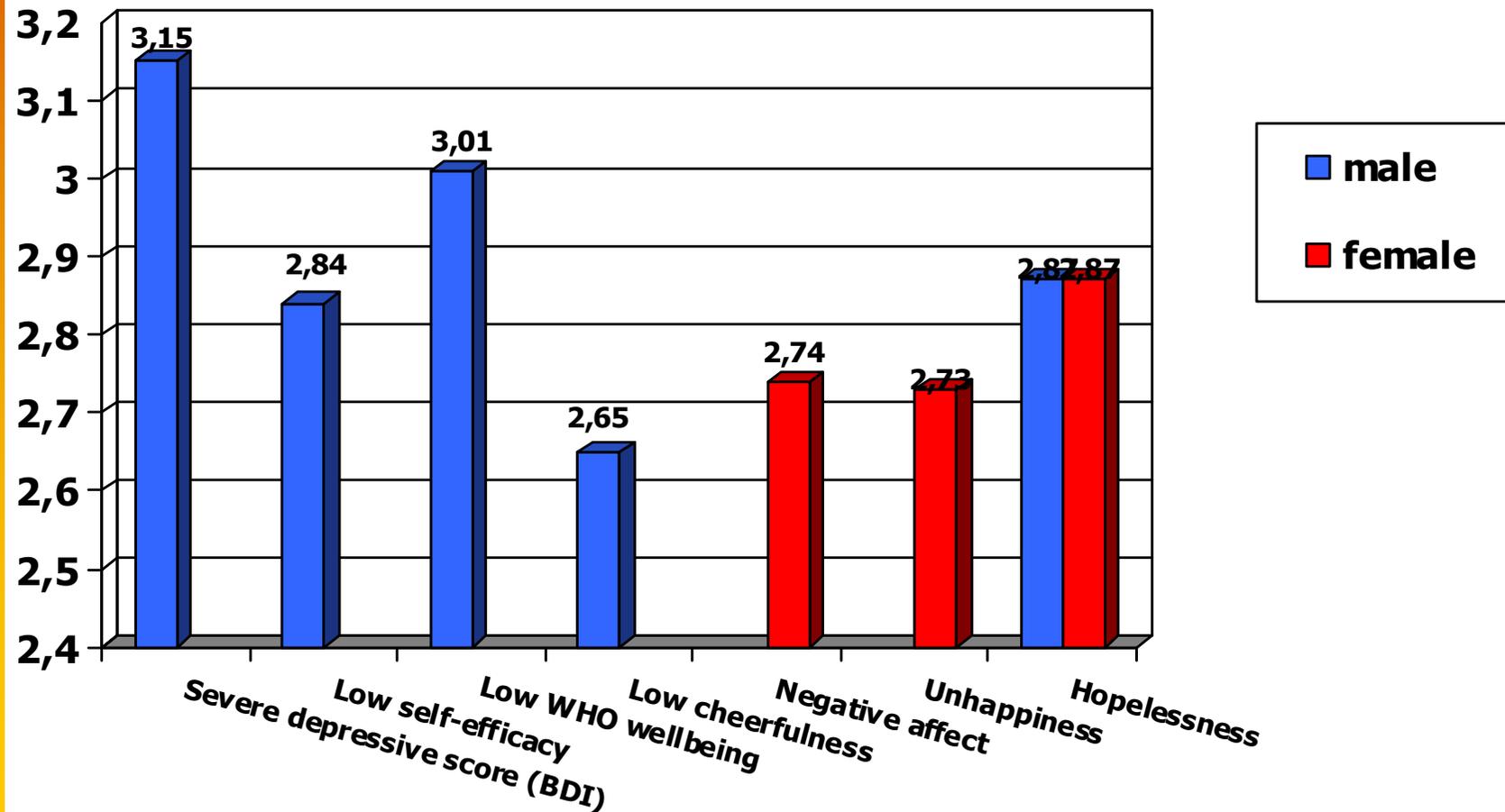
- Morning alcohol consumption
- Non stop alcohol after beginning
- Self-blame because of alcohol
- Drug consumption



# Results



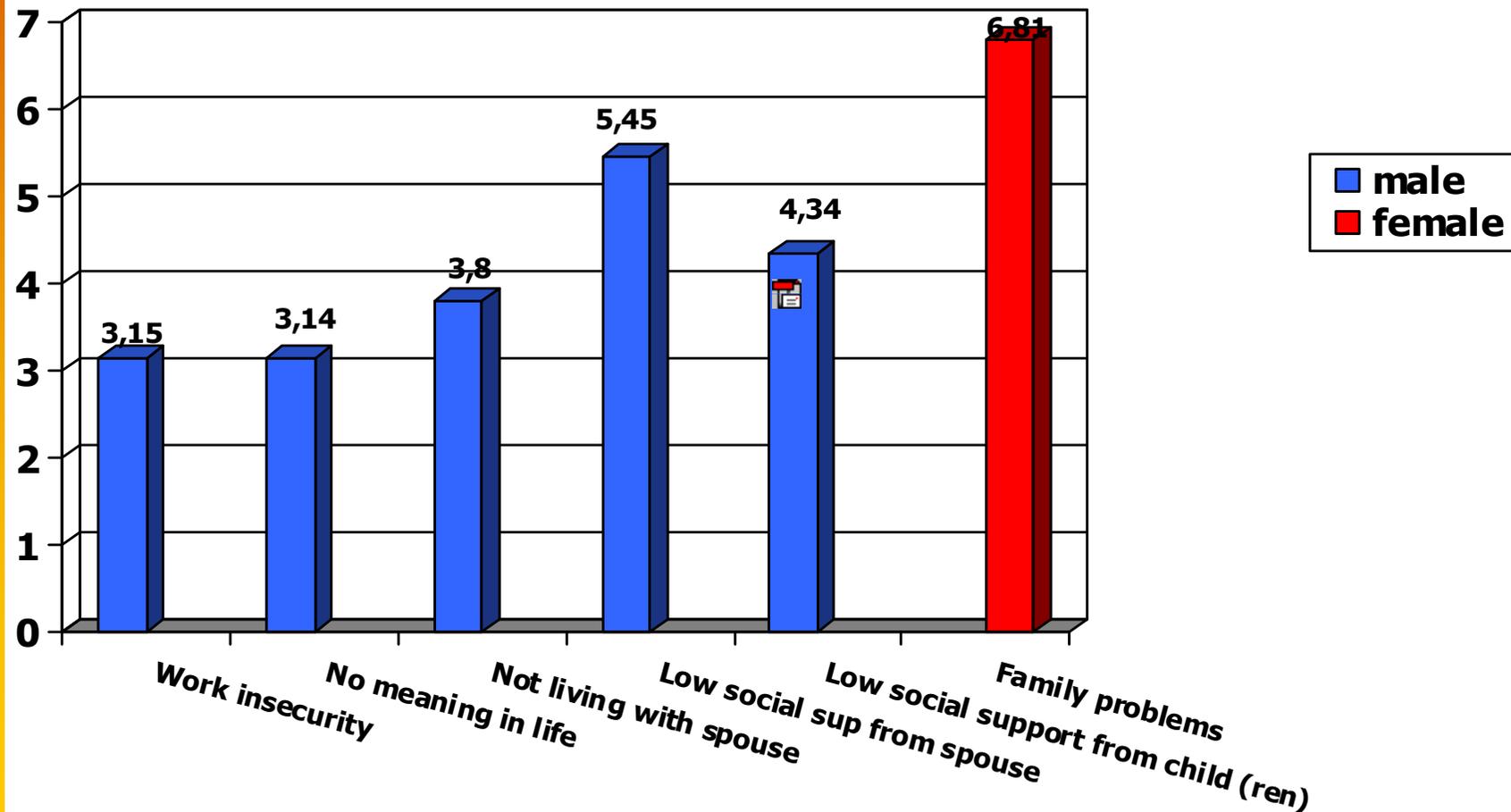
# Mental health and the risk (OR) of premature mortality (40-69 years of age in 2002) controlled for age, education, smoking, alcohol abuse and BMI



# Which are the significant risk factors among men?



**Work related and other psychosocial factors the risk (OR) of premature mortality (40-69 years of age in 2002) controlled for age, education, smoking, alcohol abuse and BMI (Hungarian Epidemiological Panel 2006)**

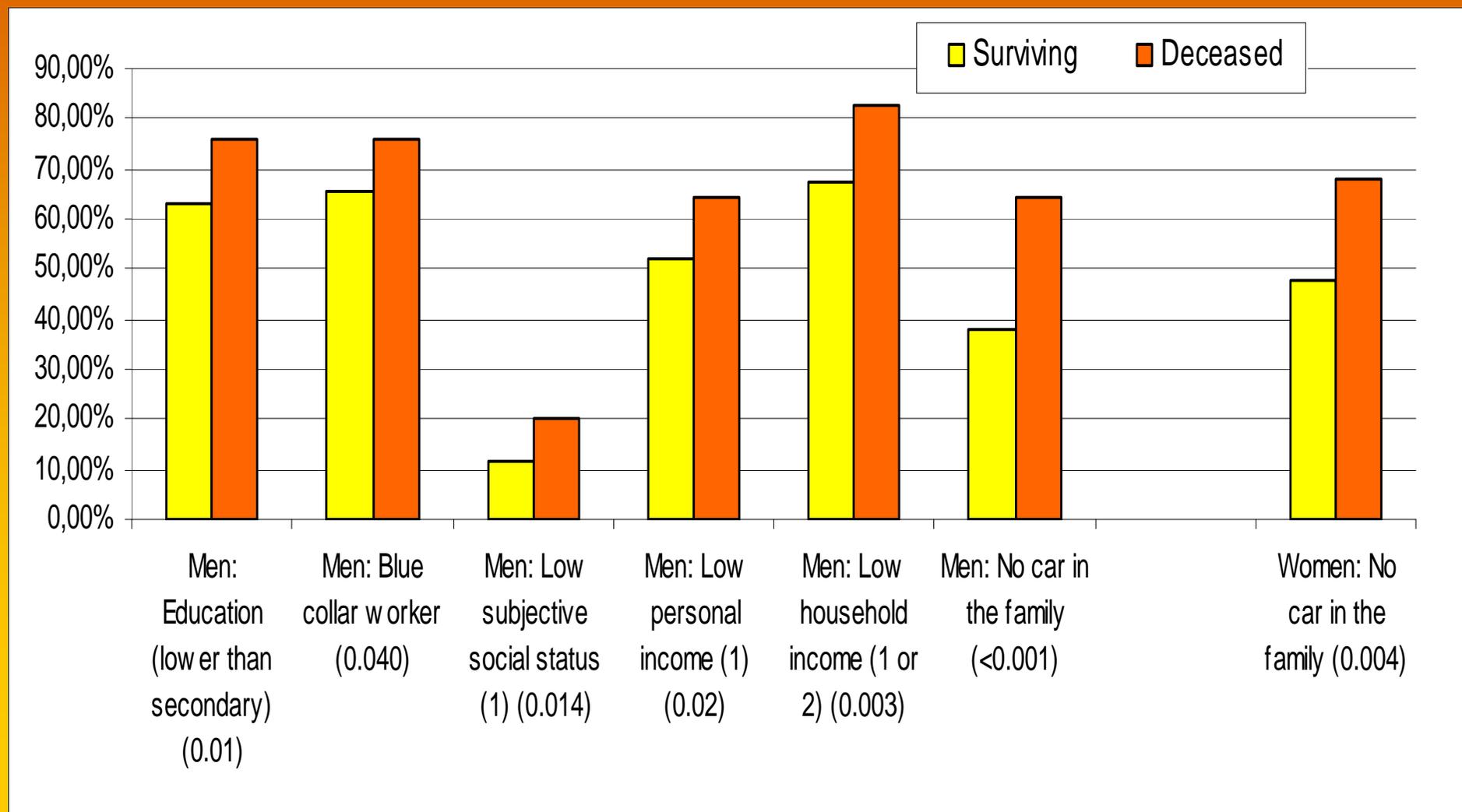


## Mortality differences according to marital status in the total Finnish population in 1996–2000.

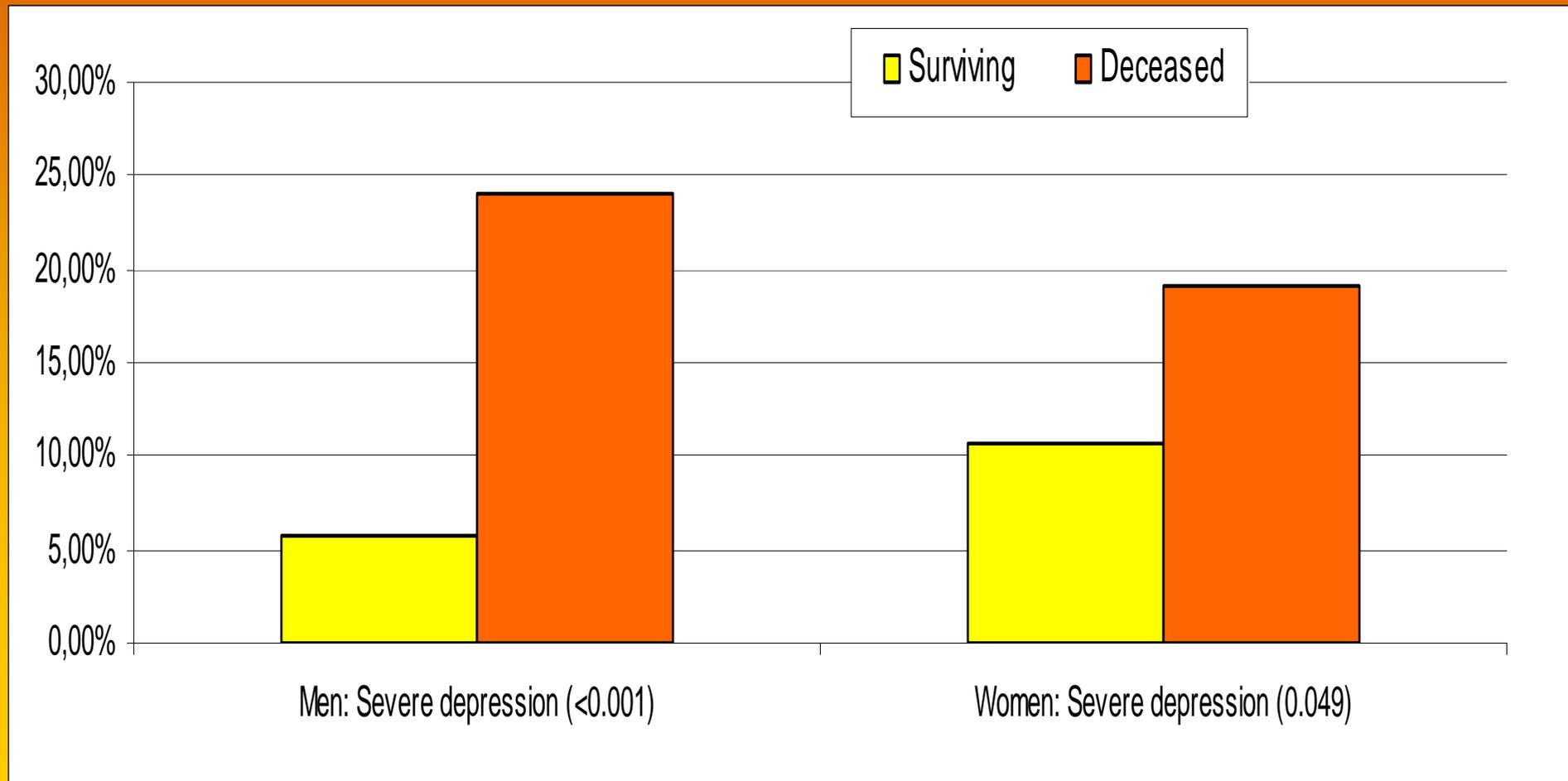
Int J Epidemiology, 2007, 36, 1255-1264. Koskinen S. et al.

- Among men aged 30 to 64, cohabiting men showed a 1.66 times higher death rate, while single men a 3.24 times higher mortality rate, when compared to married men.
- In case of women of the same age group, cohabiting women showed a 1.67 times higher death rate, while single women a 1.98 times higher mortality rate, when compared to married women.
- Compared to childless people, mortality between age 30-64 is 30% lower in case of men who have two or more children, and 50% lower in case of women with two or more children.
- **The impact of these risk factors on health is greater than smoking or obesity!**

# Comparison of surviving and deceased men and women, according to the socioeconomic factors



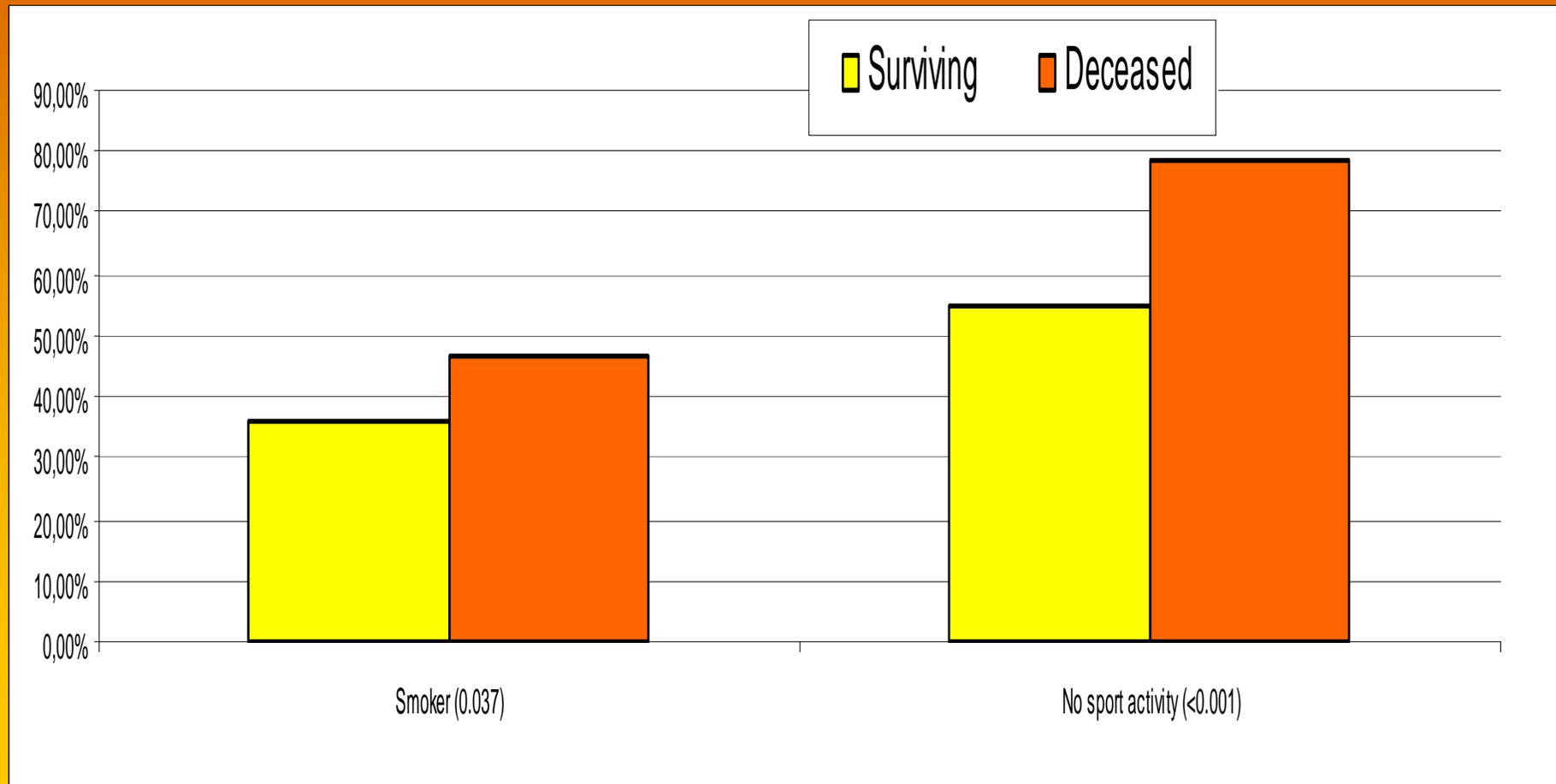
# Comparison of surviving and deceased men and women, according to the prevalence of severe depression



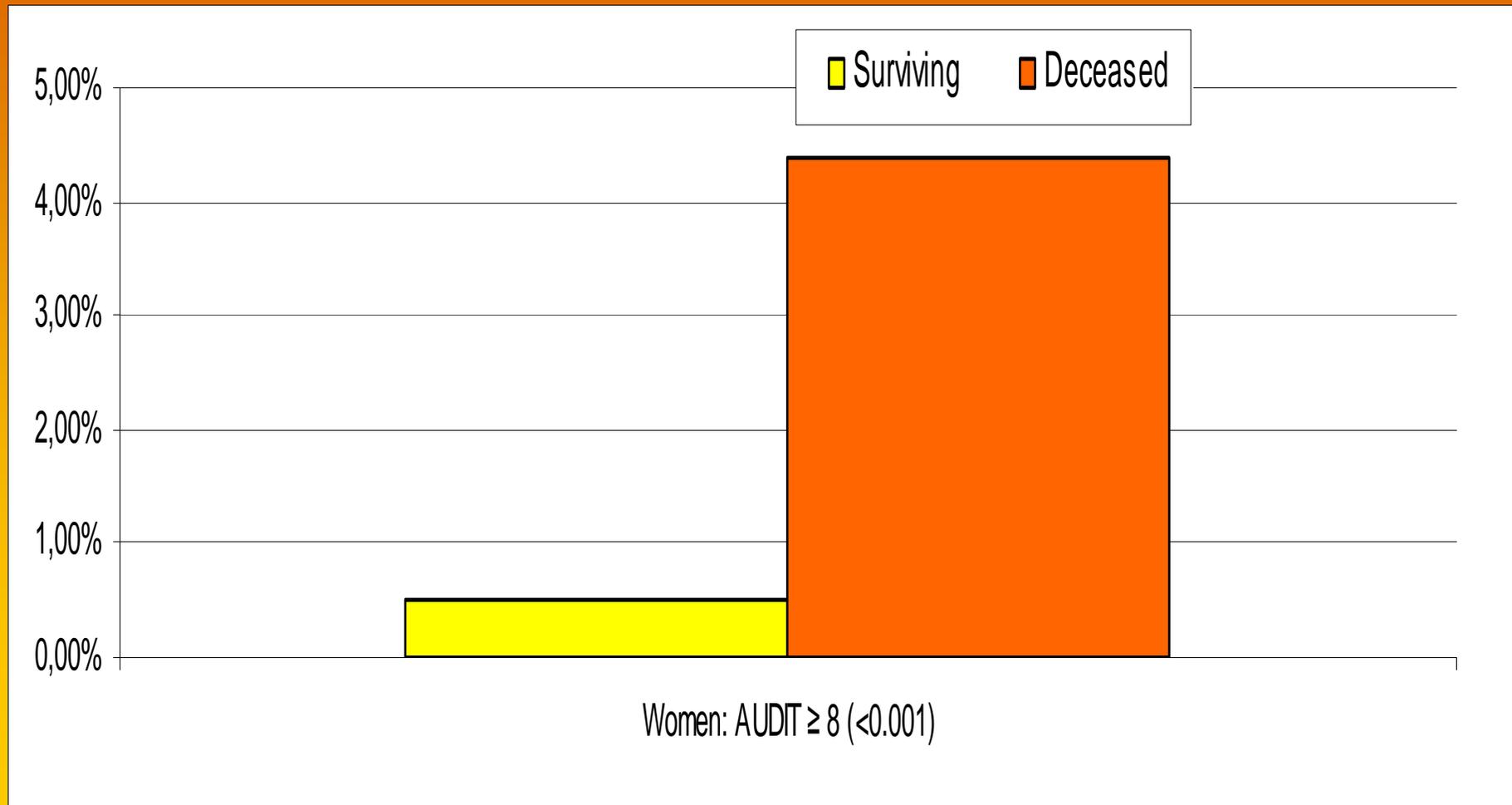
# Comparison of surviving and deceased men and women, according to the work related factors



# Comparison of surviving and deceased men according to the lifestyle factors



# Comparison of surviving and deceased women according to the lifestyle factors (AUDIT)



# Comparison of surviving and deceased men

- Low education
- Blue collar work
- Low subjective social status
- Low personal income
- Low household income
- The lack of a car in the family
- Job insecurity
- Low job control
- Not living in partnership
- Low social support from spouse
- Low social support from child(ren)
- Smoking
- The lack of sport activity were significantly more common among the deceased men than among surviving men



# Comparison of surviving and deceased women

Compared to surviving women, women who deceased during the follow-up were more likely to report

- not having a car in the family,
- severe problems in the family,
- low social support from co-workers,
- and alcohol abuse.



**Self-efficacy** and **social support scores** were **lower** in the **deceased group** both among men and women.

# Results

- After adjustment for age, education, smoking, alcohol abuse and body mass index depression, especially severe depression, increased the risk of premature death, showing 4.34 (CI 2.58-7.31,  $p < 0.001$ ) times odds but only in men.
- In 2002, the prevalence of severe depression according to the Beck Depression Inventory (BDI) was 24% among the deceased men in the sample, 5.8% among surviving men. Among the severely depressed men only 5.2 % were treated in 2002.

# Results

- Among women depression was in less significant connection with premature mortality.
- Several socio-economic and work related risk factors predicted only male premature death.
- This result might mean that severity of depression might be directly related to chronic stressors of the fundamental societal changes more among men than among women.

# Gender differences in prevalence of severe depression

- In 2002 the prevalence of severe depression was 24 % among the deceased men and only 5.8 % among the surviving men.
- In 2002 the prevalence of severe depression was 19.2 % among the deceased women and 10.6% among the surviving women.
- Only 5.2 % of deceased severely depressed men were treated because of depression in 2002, while among women this rate was 10.4 %.

# Age-adjusted hazard ratios

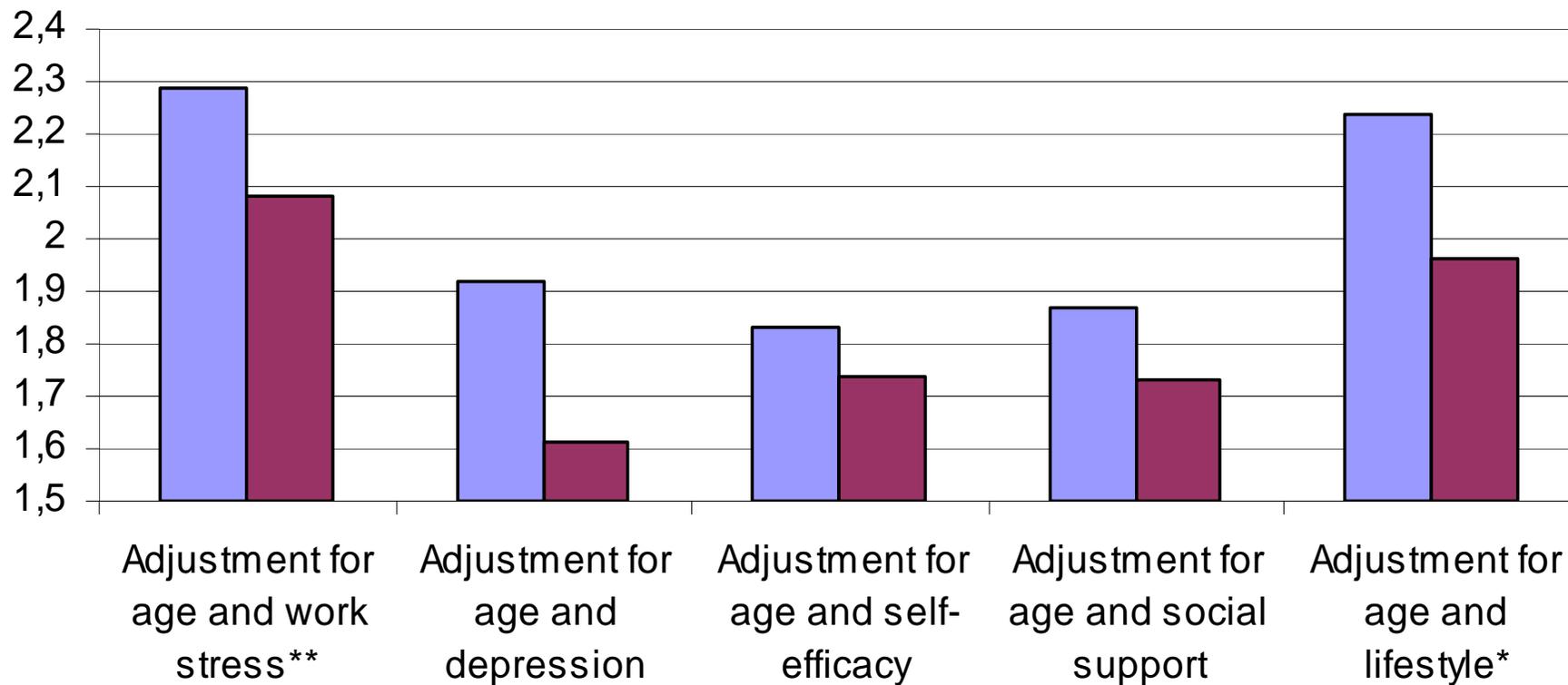
- The age-adjusted hazard ratios and the Rothman's synergy indexes showed that each measure of socioeconomic position (i.e. low education, blue collar work, low personal and family income, low subjective social status and lack of car) was more deleterious in men compared to women,
- But the strength of this interaction was different for different SES factors.

## Odds ratios for the association between education lower than secondary and mortality and changes in regression coefficients after adjustment for potential mediators among men

\* Lifestyle factors we adjusted for are: smoking, problem drinking, lack of physical activity and body-mass index.

\*\* Work stress factors we adjusted for are: control at work, job insecurity, dissatisfaction with the job and social support from colleagues.

■ Education lower than secondary HR (95% CI) for the base model  
■ Education lower than secondary HR (95% CI) for base model + mediators



# Adjustment for severe depression

- Adjustment for severe depression resulted in the highest decrease in the regression coefficients for the association between each socioeconomic factor and male premature mortality.
- There was no indication that depression would mediate between low SES and mortality in women.
- Work stress and social support might partly mediate the effect of socioeconomic deprivation on both male and female mortality.

## Why might be Hungarian men more vulnerable to the chronic stress of material deprivation than women?

- According to the “Generations and Gender Programme” survey, Hungary is the most traditional society among the 14 investigated European countries:
  - Male and female gender roles differ considerably. It is widely accepted in Hungary that household duties are women’s responsibilities.
  - Whereas men are responsible primarily for the economic situation of the family.

## **Masculine and feminine cultures and gender differences in mediating role of depression between socioeconomic factors and premature mortality**

- The work of Hofstede based on the cultural dimensions scale shows, that Hungary is a very “masculine” society. At the other end, Sweden and the other Scandinavian countries are the most “feminine” societies.
- “Masculine” societies are more assertive and competitive than the more modest and caring “feminine” societies.
- These “masculinity-related characteristics of the Hungarian society might partly explain the special health deteriorating effects of socioeconomic disadvantage among Hungarian men.

# **„Status syndrome” as crucial explanation of male/female life expectancy differences**

**This „masculine” gender role results in „status syndrome” (M. Marmot) among men, which might be the most important explanation of male/female life expectancy differences in this cluster of countries.**



# Conclusion

- In Hungary there are huge differences between the male and female gender roles and consequently middle-aged Hungarian men seem to be considerably more vulnerable to the chronic stress of material deprivation than women.
- This effect modification by gender might partly be explained by a stronger connection between low socioeconomic situation (SES) and depressive symptoms in men.

## Why has gender research become significant in psychosomatic medicine?

- Gender research is very important from the aspects of public health as well as demography.
- Disorders in gender cooperation have become as important as the other well-known risk factors, i.e. self-destructive behaviour (e.g. smoking, obesity, alcohol abuse).
- The aim of gender research from the aspect of psychosomatic medicine is to examine by objective methods how the best quality of life and health can be reached for both women and men who are facing the challenges of the 21st century.

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