Low socioeconomic status of the opposite sex is a risk factor for middle aged mortality

Maria S Kopp, Árpád Skrabski, Ichiro Kawachi, Nancy E Adler

Objectives: To examine the relations between subjective social status, and objective socioeconomic status (as measured by income and education) in relation to male/female middle aged mortality rates across 150 sub-regions in Hungary.

Design: Cross sectional, ecological analyses.

Setting: 150 sub-regions of Hungary.

Participants and methods: 12 643 people were interviewed in the Hungarostudy 2002 survey, representing the Hungarian population according to sex, age, and sub-regions. Independent variables were subjective social status, personal income, and education.

Main outcome measure: For ecological analyses, sex specific mortality rates were calculated for the middle aged population (45–64 years) in the 150 sub-regions of Hungary.

Results: In ecological analyses, education and subjective social status of women were more significantly associated with middle aged male mortality, than were male education, male subjective social status, and income. Among the socioeconomic factors female education was the most important protective factor of male mid-aged mortality. Subjective social status of the opposite sex was significantly associated with mid-aged mortality, more among men than among women.

Conclusion: Pronounced sex interactions were found in the relations of education, subjective social status, and middle aged mortality rates. Men seem to be more vulnerable to the socioeconomic status of women than women to the effects of socioeconomic status of men. Subjective social status of women was an important predictor of mortality among middle aged men as was female education. The results suggest that improved socioeconomic status of women is protective for male health as well as for female health.

Abbreviations: SES, socioeconomic status; SSS, subjective social status
RESULTS
Relation between objective and SSS and male and female middle aged mortality rates
Table 1 shows the minimal, maximal, and mean values of the analysed socioeconomic variables in the 150 sub-regions of Hungary. Education is almost equal in Hungary among men and among women, but with higher variance among women. The maximal value of female education is much higher in some regions showing a real development. Despite this fact average personal income of women is considerably lower compared with men with lower variances. Interestingly the SSS of women is similar to male subjective social status, which shows that in female subjective standing the overall situation of the family might be a more important factor than in the individual SSS of women.

For the purpose of ecological analysis we first computed the correlation coefficients for the average levels of variables in the 150 sub-regions of Hungary. Table 2 shows that among men middle aged male mortality showed significant correlations with male education, income, and subjective social status, but in each case female SES variables showed closer connections with male mid-aged mortality than did the male SES variables. Female SSS, income, and education were correlated with female mortality. Male SSS and education related to female mortality, but male income did not.

Table 3 shows the results of ecological multivariate stepwise regressions models in connection with male mid-aged mortality. Model 1, which includes only male variables, shows that male education explained 11.5% of male mortality differences among sub-regions, while income and SSS were no longer significant. Interestingly the female SES variables alone in model 2 explained comparatively more of the variance of male premature mortality (28.1%). When examined together in model 3, female SSS was a more
significant predictor of male mortality than male SSS; female education, and subjective social standing explained the mid-aged mortality differences among the sub-regions, while the male SES characteristics were excluded from the model.

Among women, ecological regression models showed weaker associations (table 4) with female variables. Female education explained only 9% of the variance in female mid-aged mortality and income and SSS were excluded. Male SES factors were even weaker predictors of female mortality, with male education explaining 6.9% of female mortality rate variation. This is much weaker than the opposite association between female SES and male mortality. With both male and female SES variables included, female education and male SSS together explained 11.1% of the mid-aged female mortality differences among sub-regions.

**DISCUSSION**

Our paper analysed ecological level data from a large, representative survey of the Hungarian population. Our main question was the association of the SES of the opposite sex on the premature mortality of men and women.

In agreement with our earlier results, 15 20 there is an interrelation of male and female health within regions. Male health seems to be highly vulnerable to SES and its subjective perception by women. Interestingly high educational level of women is much lower. It can be hypothesised that women might contribute to the fact that middle aged women experienced less health deterioration during the recent economic transition despite sharing the same socioeconomic and political circumstances as men. 20

Although education and income were significant predictors of mortality both among men and women, subjective social standing was also strongly associated with mid-aged mortality. These results are in good agreement with the latest results of the Whitehall II study, which shows SSS reflects the cognitive averaging of a broad set of markers of SES situation including but not limited to education and occupation. 22

The SSS and education of women were strongly and inversely correlated with male mid-aged mortality, which means that in sub-regions where women hold more negative appraisal of the social standing and have lower education, there is greater male health deterioration.

SES was assessed both among men and women on the basis of their overall evaluation of their social standing, and the ecological aggregates of these measures were analysed on regional level for men and women. Today unemployment is higher among men than among women in Hungary, the normal model is the two person household. 21 Despite the high educational level of women, the average female income of women is much lower. It can be hypothesised that women assess their subjective social standing according to the overall situation of the family.

These results suggest that at least in a more traditional society such as in Hungary, in the period of intense socio-political changes middle aged men are more vulnerable to the
What is already known about this topic

- There is a strong social gradient in mid-aged mortality
- Men are more susceptible to income inequality than women
- Subjective social status is a strong predictor of health

What this study adds

- The socioeconomic status of the opposite sex was a significant predictor of mid-aged mortality, more among men than among women
- Better education of women was a significant protective factor for male mid-aged mortality
- Subjective social status of the opposite sex was a significant predictor of mid-aged mortality, much more among men than among women
- Improved socioeconomic status of women is protective for male health

Summary of policy implications

In both sexes, education and subjective social status are significantly connected with the premature mortality rates of the opposite sex as well. Education and the subjective social status of women is significantly associated with male mid-aged mortality. Consequently in preventing the high male premature mortality in Central-Eastern Europe women might play an important part. The improvement of higher education of women seems to be beneficial both for male and female longevity. Educated women accept more the responsibility for the socioeconomic situation of their family. The feeling of relative socioeconomic deprivation among women in the comparatively deprived regions, in contrast, might result in a vicious cycle of relative deprivation among men.

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