

**Suicide and pathways between different socioeconomic indicators:  
A register-based study of Finnish women**

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*Abstract*

Suicide is a common cause of death in many European and North-American countries. Among both men and women of working age suicide was the fourth most common cause of death in Finland in 2002, hence among men every tenth and among women every fourteenth death was caused by suicide. However, considerable variation exists in suicide mortality between population sub-groups including socioeconomic status. While socioeconomic inequalities have been well documented for total mortality and many diseases very little is known about socioeconomic differences in suicide mortality especially among women, an omission that this study aims to redress.

We used simultaneously different indicators – education, occupation based social class and income – for socioeconomic status. Instead of being interchangeable these indicators are partially independent and partially inter-dependent determinants of health as they partly implicate different impacts and causes. Most studies concerning suicide mortality, however, have entirely ignored the pathways between different socioeconomic indicators. Furthermore, because main economic activity is closely related to many indicators of socioeconomic status and because family type, for example motherhood, may buffer against suicide risk we also studied their effects.

The objective of this study was to study the pathway between different indicators of socioeconomic status and female suicide mortality in Finland in 1991–2001. Our initial interest was to understand occupation-based social class differences in suicide mortality. We aimed to establish to what extent education – a socioeconomic indicator preceding social class - and income – a measure succeeding social class - explained class differences in suicide mortality. The specific research aims are to:

- i examine the magnitude of suicide mortality differences by each socioeconomic indicator among women.
- ii study to what extent each indicator is associated with suicide mortality net of the other indicators.
- iii assess whether socioeconomic indicators explain or mediate the effect of each other.
- iv examine whether main economic activity or family type explain or mediate any of the net effects.

Internationally unique register data were used in this study. Data comprised of individual level register data from the 1990 census linked to records from the death register for the years 1991–2001. The outcome measure was suicide mortality. Because socioeconomic status is not yet established at young ages, analyses included only those who were 25 years of age or older. Altogether over 14 million person years were included and 2 137 suicides were committed during the study period. Statistical methods applied include age-adjusted death rates as well as Poisson regression models.

All socioeconomic indicators were associated with suicide mortality though not linearly. No significant differences in relative suicide mortality rate between the two highest education and income groups and between the three highest social class groups were found. For every indicator the lowest socioeconomic groups, however, differed: those with basic education had about 1.40 times, non-skilled manual workers 1.60 times and those with lowest income 1.50 times higher suicide mortality rate than those in the highest education, social class or income groups respectively. Almost all of the effect of education on suicide mortality risk was mediated by social class. Education, on the other hand,

explained about 15 per cent of the effect of social class, but not as much as income 40 per cent. However, no further reduction in suicide mortality risk was observed by the simultaneous adjustment of education and income. The association between income and suicide was also somewhat mediated by the other two indicators, 13 per cent by education and almost 25 per cent by social class. Consequently, social class and income both had net effects on suicide mortality risk: manual workers had some 30 % higher risk than those in the upper non-manual group, and those in the two lowest income group 30 and 45 % higher risk respectively compared to those in the highest income group.

Next, we studied whether adjusting for main economic activity and family type (married with children, married without children, single parent or not part of the family) attenuated the effects of socioeconomic status. This happened in the case of income: most of its effect on suicide mortality risk (about 90 per cent) was mediated by main economic activity and the rest was mediated by family type.

In summary, almost all of the effect of education was mediated by social class. 15 per cent of social class was explained by education and 40 per cent was mediated by income. We found that social class had net effect on suicide mortality risk, even after simultaneous adjustment and after controlling for economic activity and family type. The effect of income on suicide mortality risk, on the other hand, occurred from main economic activity and family type. Occupation-based social class is thus a relevant measure when socioeconomic differences in female suicide mortality are studied. Also, actions aimed to prevent female suicide ought to be allocated to this group.