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J. Epidemiol. Community Health 2002;56;798-799
doi:10.1136/jech.56.10.798

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SHORT REPORT

Relation of occupational class and education with mortality in Korea

M Son, B Armstrong, J-M Choi, T-Y Yoon

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Although the association between socioeconomic status and mortality has been studied in developed countries, much less is known about this association elsewhere. The aim of this study was to investigate the relation of occupational class and education with mortality in South Korea.

METHODS

We investigated mortality in the Korean working population aged 20–64 using registered death data from 1993 to 1997 obtained from the Korean National Statistics Office (NSO). Occupation and educational level, as described by next of kin, is recorded and coded routinely. Denominators were derived from a 10% stratified random sample of the 1995 census. The deaths and denominators were limited to the working population (after deleting the unemployed or housewives aged between 20 and 64 years, leaving 287 001 from 484 110 whole deaths and 16 923 772 from 27 163 775 whole population between 1993 and 1997). In this report we compare mortality in manual and non-manual workers and according to education grouped into four categories: “elementary” (<7 years), “middle” (7–9), “high” (10–12), and “university” (>12).

Poisson regression was used to examine the relation between occupational and educational class and mortality rates adjusting for age, and where indicated adjusting occupation for education and vice versa. Age was considered a categorical variable, grouped into five year bands.

RESULTS

Manual workers and those with less education exhibited higher mortality than non-manual workers (table 1). The associations

with occupation disappeared entirely in men and largely in women on adjusting for education, whereas those with education changed little on adjusting for occupation. Cause specific analyses (details not given here) show this pattern for most causes, with the exception (in men) of infections, mental, respiratory, digestive, and musculoskeletal diseases, for which manual workers have higher mortality even after adjusting for education. Female manual workers have particularly high mortality for endocrinal, nutritional and metabolic diseases, mental disorders, and digestive diseases.

DISCUSSION

The association of mortality with occupational class and education in Korea (GDP per capita 8871 USD in 1999; life expectancy 75.6 years in 1999) is in the same direction as that found in many more developed countries, and greater than in most European countries.^{1,2} A remarkable feature of our results is the dominance of the effect of education over that of occupation. The two were closely associated, but the education effect remained very clear after occupation had been adjusted for although the reverse was not true. This contrasts with the United Kingdom, where Davey Smith *et al*³ found that occupational social class was a better discriminator of socioeconomic differentials in mortality than was education. Part of the explanation for this may be the greater number of groups by education than by occupation in our analyses, though other analyses using a finer occupational classification (details not shown) gave similar results. We believe that the role of education may be particularly strong for Korea because the strategy for economical survival within the pressures of domestic

Table 1 Association of occupational class and education with mortality in Korea

	Deaths	Rate ratio (95% CI)			
		Adjusted for age	Adjusted for age and education/occupation		
<i>Men</i>					
Occupation					
Non-manual	82478	1.0			
Manual	165790	1.65	1.63 to 1.66	0.94	0.93 to 0.95
Education					
University	26006	1.0			
High	66060	1.68	1.66 to 1.71	1.73	1.70 to 1.75
Middle	54398	3.29	3.24 to 3.34	3.43	3.37 to 3.48
Elementary	101804	5.11	5.03 to 5.18	5.37	5.28 to 5.46
<i>Women</i>					
Occupation					
Non-manual	12778	1.0			
Manual	25955	1.48	1.45 to 1.52	1.17	1.14 to 1.20
Education					
University	2248	1.0			
High	5690	1.25	1.19 to 1.32	1.21	1.15 to 1.27
Middle	4719	1.98	1.87 to 2.09	1.84	1.74 to 1.94
Elementary	26076	3.42	3.24 to 3.60	3.06	2.90 to 3.24

capitalism and imperialism has been through massive investment in education.⁴ It is also possible that strong beneficial effects of education on health in a less developed country are weaker in developed countries because they have already been achieved—the effect has “plateaued off”.⁵

The analysis of mortality, like others based on occupation recorded on the death certificate is vulnerable to misclassification and in particular numerator-denominator bias.⁶ (This was one reason we limited the occupational groups to manual and non-manual classes.) However, findings in a parallel study of morbidity also showed excesses in manual and less educated workers, with education dominating.⁷ Because this was from a single large household survey and therefore not subject to numerator-denominator bias, it suggests that such bias is not responsible for these features.

In conclusion, association of class—expressed in terms of occupation and educational background—with mortality seems somewhat stronger in Korea than in more developed countries. The effect of education predominates, but the close association of the two variables, and data limitations, suggest a cautious interpretation of this feature.

Contributors

All four investigators contributed to the design, execution, and analysis involved in the writing of the paper. Mia Son initiated the planning of the study, collected the data, carried out the data analysis, and wrote the initial draft. Ben Armstrong supervised the design, implementation and data analysis, and contributed to the writing of the paper. Joong-Myung Choi contributed to collecting data, critically revised the paper and commented on it. Tae-Young Yoon contributed to the design of the study and advised on the interpretation of data and participated in the review of the paper. All investigators participated in its preparation and review.

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Funding: this study was supported by a grant from the Ministry of Labour in Korea.

Conflicts of interest: none.

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Accepted for publication 26 April 2002

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