Case Study

Study of a Mortality Surge among Transport Workers in Japan

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The existence of different mortality rates in the various occupational groups is well known. However, looking at the gradients of mortality between 1965 and 2000, we found a surge in the mortality rate of transport workers in 1990, large beyond that of the mortality rate of all workers1). We had already reported an increase in mortality from cardiovascular diseases, ischemic heart diseases, stomach cancer and lung cancer in male transport workers in 1990 compared to 19851), and in this paper we focus on the mortality due to accidents (external causes) of which 58 to 67% was occupied by traffic accidents2).

Age-adjusted mortality rates (based on the 1985 population as the reference group) from accidents and adverse effects (ICD 7–9th codes 800–929; ICD 10th codes S00-T98, and V00-V99) for eight occupational groups (farmers, foresters and fishermen; craftsmen, production process workers and other laborers including mining workers since 1990; sales workers; transportation and communication workers; service, sport and recreation workers; clerical workers; professional technical workers and artists; administrators and managers) were available from the reports of vital statistics by occupation and artists; administrators and managers; service, sport and recreation workers; clerical workers; professional technical workers and artists; administrators and managers) were available from the reports of vital statistics by occupation and industry published by the Ministry of Health, Labour, and Welfare, Japan2).

Figure 1 provides information on regular and overtime working hours per month for all workers and transport workers (obtained from the white paper on labor, 2001, Japan). From 1985 to 2000 regular and overtime working hours were constantly higher for transport workers than those for all workers. Figure 1 also shows the mortality rates due to accidents and adverse effects from 1970 to 2000 for transport and all workers. There was a surge in the mortality rate of transport workers in 1990, large beyond that of all workers, and it coincided with a rapid increase in freight transport (Fig. 2) and an increase in regular working hours of transport workers. A drop in the mortality rate of transport workers was observed in 1995 and 2000 which coincided with shorter regular and overtime working hours (Fig. 1). However, other reasons might also have contributed to this drop, such as improvements in technology and more sophisticated safety measures both on roads and in workplaces.

Although there was no big change in the number of male transport workers, 2.18 million in 1980 and 2.15 million in 1990, freight transport volumes steadily increased over the same period suggesting that workload in this group of workers was a causative factor of increased mortality rate in 1990 (Fig. 2). Furthermore, the overtime working hours of transport workers in 1990 compared with that of 1970 as a reference was the highest during the 30-yr period of this study (Fig. 2).

Figure 3 shows age-adjusted mortality rates due to accidents in the eight occupational groups in 1990. Transport workers had the highest mortality rate due to accidents among the occupational groups with 113.5 deaths per 100,000 of population. The deaths due to accidents for transport workers in 1990, with 1985 as the reference year, was the highest at 1.47 times folds followed by administrative, and service workers (Fig. 4).

The figures in this case study of Japanese transport workers are consistent with the results of previous studies in other countries3,4). Transport workers were the most frequent victims of work-related traffic accidents while on duty in Australia5). With higher regular and overtime working hours and a surge in freight transport volumes in 1990 compared to 1985, we speculate that transport workers suffered an increased burden of job demand in that period. Increased fatigue levels as a result of increasing job demand and workload might explain the higher mortality rate due to accidents of transport workers in 1990. Fatigue, in particular, was reported in 28% of fatalities involving heavy truck drivers in a previous study6). Prolonged working hours have also been identified as a major cause of fatigue for long distance drivers3). Findings of a survey in the Tohoku region of Japan also showed that 15% of long distance truck drivers reported feeling very high levels of fatigue8). Fatigue affects transport workers’ performance by impairing information processing, attention and reaction times.

Although this case study was based on statistical figures, the findings highlight the vulnerability of transport workers to deaths due to accidents or external causes in a period of high job demand. It is also suggested that data record linkage of individual workers based on death certificates could provide more precise clues to the association of occupation to changes in the mortality rates.

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Fig. 1. Regular and overtime working hours and mortality rates due to accidents (external causes) in all male occupational groups and transport workers over 15 yr of age.

Fig. 2. Number of male transport workers and freight transport volumes between 1965 and 2000, and overtime working hours of transport workers as a multiple of the 1970 value.

Fig. 3. Age-adjusted mortality rates due to all accidental (external) causes in eight occupational groups in 1990.
Fig. 4. Ratio of deaths due to accidents (external causes) in 1990 by that of 1985 in eight occupational groups.

References


