

## The Economic and Medical Costs of Alcohol Consumption in Japan

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Excessive use of alcohol not only has a deleterious effect on human health generally, it also negatively impacts every aspect of human life. According to the statistics from the World Health Organization (WHO) reports, excessive use of alcohol causes the death of about 2.5 million people annually worldwide (1). Based on estimates from the WHO, alcohol is the eighth biggest health risk factor associated with mortality and it is the third biggest health factor on the disability-adjusted life-years (DALY). Alcohol drinking is more important in the DALY than other factors such as hypertension (2). In 2008, estimates of victims of alcohol consumption were 34 988 in Japan (3). Furthermore, the healthcare burden of alcohol consumption by men and women in Japan accounts for 6.7% and 1.3%, respectively of the total DALY. Alcohol consumption imposes a marked economic burden on the society including healthcare costs and costs associated with loss of productivity. Previous studies have reported on the resultant healthcare costs from alcohol consumption in Japan.

There are two papers on the estimates of the costs of social and economic loss to alcohol consumption in Japan. Nakamura *et al* (4) estimated that the total cost of alcohol consumption in Japan in 1987 was about 6600 billion yen: 1200 billion yen in direct healthcare costs, and about 5300 billion yen in indirect costs such as loss of productivity. Osaki *et al* (5) also estimated about 4148.3 billion yen as the total economic cost of alcohol consumption in Japan in 2008. It was calculated by the same estimation formula used in 1998, which showed about 10 226 billion yen in direct healthcare costs and about 30 974 billion yen in indirect costs (5). Though these two studies differ in years, the estimates of direct healthcare cost were about 1000 billion yen in both.

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These total costs, as well as the social cost of smoking in Japan, were more than the amount realized by the government from alcohol tax income.

Previous papers have reported on the cohort studies on healthcare costs of excessive alcohol consumption in Japan. In the Ohsaki National Health Insurance Cohort Study (6), a baseline questionnaire survey was distributed to about 50 000 National Health Insurance (NHI) beneficiaries aged 40–79 years, living in the catchment area of the Ohsaki Public Health Center, Miyagi prefecture, Japan in 1994, and NHI claims were collected prospectively. In this study, Anzai *et al* (6) reported that 17 497 men were observed for four years and inpatient cost was highest for the men whose ethanol intake was more than 450 g/week after adjusting for age, body mass index, smoking and exercise habits. On the other hand, outpatient data showed an inverse linear relationship with alcohol consumption. Another study, the Shiga NHI Cohort Study, included 2039 NHI beneficiaries aged 40–69 years living in Shiga prefecture, Japan (7). The baseline survey, with medical check-up, was performed in 1989 or 1990 and the subjects' drinking habits were estimated by questionnaire. Medical care use and costs were monitored by linkage with the NHI claims at baseline survey to about nine years at the end of March 2000. Men who were daily heavy drinkers (ethanol intake  $\geq$  69 g per day) had significantly higher medical costs and sum of in- and outpatients cost, when compared to participants who drank less, within five years after baseline. This difference was 2000 yen per month after adjusting for age, body mass index, smoking, systolic blood pressure, glycosuria, serum cholesterol and alanine aminotransferase (7). Ethanol intake of  $\geq$  450 g/week in the Ohsaki NHI Cohort Study means ethanol intake of 64.3 g/day in daily drinkers. Amounts of ethanol intake and follow-up years among men were similar both in the Ohsaki and Shiga NHI cohort studies. The results indicate that heavy drinkers tend to incur more medical costs within a five-year period.

In conclusion, control of alcohol consumption reduces mortality and economic burden. The estimated economic cost of alcohol consumption in Japan was about 1000 billion yen per year in direct healthcare cost and heavy drinkers tend to increase the medical cost within five years in Japan.

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