CHAPTER 2.3

CIGARETTE SMOKING, CORONARY HEART DISEASE AND ALL-CAUSES MORTALITY IN THE SEVEN COUNTRIES STUDY

Daan Kromhout
When the Seven Countries Study started in 1958 the relationship between cigarette smoking and lung cancer was already known (1,2). The 1962 data of the Framingham and Albany studies showed that cigarette smoking was also an important risk factor for CHD (3). At that time, high prevalence rates of cigarette smoking (75-90%) were observed in middle-aged men in Great Britain and the Netherlands (4,5). However, men who died from tobacco-related diseases in the 1950s had been exposed to the habit for a relatively short period. The full health consequences of long-term exposure to cigarette smoking have only recently become evident (6).

Of all lung cancer deaths in middle-aged men, more than 90% can be attributed to tobacco (7). A similar percentage is found for chronic obstructive pulmonary diseases. For vascular diseases (CHD and stroke) this percentage is about 35. However, the absolute number of vascular deaths attributed to smoking in the U.S. and northern European countries (Great Britain and the Netherlands) is higher than that for lung cancer. Of the 2.1 million deaths in 1985 in the U.S., 110,000 lung cancer deaths, 31,000 deaths from other cancers, and 143,000 vascular disease deaths were attributed to smoking. Tobacco causes as many deaths from vascular diseases as all types of cancer together. Vascular diseases are thus a major harmful health consequence of cigarette smoking.

This chapter summarizes trends in the prevalence of cigarette smoking in the Seven Countries Study for a 35-year period and the relationships between cigarette smoking and mortality from CHD and all-causes, both at the population and individual level.

TRENDS IN THE PREVALENCE OF CIGARETTE SMOKING IN A 35-YEAR PERIOD

Information on smoking was collected in the Seven Countries Study on the type of smoking (cigarette, cigar and pipe), past and current smoking and the amount smoked using a standardized questionnaire (8). With the exception of the Zutphen cohort, almost all men smoked cigarettes only. Because in Zutphen most pipe and cigar smokers also smoked cigarettes, only the results on cigarette smoking will be reported. The prevalence data are reported as the percentage of the population that smoked cigarettes.

In the Finnish cohorts of the Seven Countries Study the questionnaire data on smoking were validated by objective blood tests (9,10). In 1959 serum thiocyanate concentration was measured among 1,539 men aged 40-59, and in 1974, random measurements of the proportion of hemoglobin bound to carbon monoxide (COHb%) were carried out in 1,068 men, aged 55-74. Serum thiocyanate concentration effectively distinguished between men smoking at least 10 cigarettes per day from non-smokers (9). Light smokers with a daily consumption of 1-9 cigarettes per day had intermediate values of serum thiocyanate. Mean values for moderate and heavy smokers did not differ. COHb% was strongly related to cigarette smoking (10); concentrations above 2% were much more common in current smokers (70%) than in never-smokers (7%). Based on these validation studies, it can be concluded that current smokers identified with the Seven Countries Study questionnaire could be distinguished from never-smokers.