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Title : Morbidity and mortality among smokers and non-smokers - 30 years follow-up of 54 000 middle-aged Norwegian women and men

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Smoking is strongly related to morbidity and mortality from various causes. We studied mortality by smoking status and cardiovascular morbidity by smoking status in middle-aged men and women followed for three decades. During 1974-78 all persons aged 35-49 years living in three Norwegian counties were invited to a cardiovascular screening (hereafter called baseline), and so where random samples of younger age groups. Around 91% of the invited attended. In 2006-08 (hereafter called follow-up) a questionnaire was sent to all surviving participants born 1925-47. Deaths were recorded by linkage to the Population registry of Norway. A total of 57% filled in the questionnaire and gave written consent, ranging from 50% in the oldest half to 63% in the youngest half. Based on smoking habits reported at baseline participants were categorised as never smokers, ex-smokers, current cigarette smokers 1-9 cigarettes/day, 10-19 cigarettes/day and ≥ 20 cigarettes/day (the last group hereafter called heavy smokers). Mean age was 40 years at baseline and 72 years (range 60-83) at follow-up. Of the original 54075 participants, 13103 (24.2%) had died at follow-up 30 years later. In men, the proportion that died ranged from 18% in never-smokers to 45% in those reporting heavy smoking at baseline (age-adjusted RR 2.3, 95% CI 2.1-2.5). The corresponding figures in women were 13% in never-smokers and 33% in heavy smokers (age-adjusted RR 2.7, 95% CI 2.4-3.1). In the survivors responding to the questionnaire at follow-up, 1778 men and 658 women stated that they had had a myocardial infarction (MI). The cumulative incidence of MI increased from 10% in never-smoking men to 21% in heavy smoking men and from 4% in never-smoking women to 11% in heavy smoking women. Compared to never-smokers, the RR for MI was thus 1.9 (95% CI 1.6-2.2) in heavy smoking men after adjustment for age, total serum cholesterol, systolic blood pressure, physical activity in leisure time and county of residence. The corresponding figure in women was 3.0 (95% CI 2.0-4.5). At follow-up, 3033 men and 1874 women reported MI, stroke and/or diabetes mellitus. In men, the cumulative incidence increased from 20% in never-smokers to 36% in heavy smokers (multivariate adjusted RR 1.7 (95% CI 1.5-1.9)), and in women from 14% in never-smokers to 24% in heavy smokers (multivariate adjusted RR 1.8 (95% CI 1.4-2.4)). Our data suggest that around 2/3 of the heavy smoking men and 1/2 of the heavy smoking women had died or contracted MI, stroke or diabetes mellitus during three decades of follow-up. In never-smokers, the corresponding figures were 1/3 in men and 1/4 in women.