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Mortality of auto mechanics

A ten-year follow-up

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HANSEN ES. Mortality of auto mechanics: a ten-year follow-up. *Scand J Work Environ Health* 1989;15: 43—46 This study was set up to investigate whether work in car repair workshops is associated with an increased risk of ischemic heart disease and specific malignant neoplasms. For this purpose, a cohort of auto mechanics has been followed through 10 years with regard to cause-specific mortality. Comparisons were made with another cohort of skilled male workers who were not exposed to asbestos or petrochemical substances. The auto mechanics' mortality was increased for ischemic heart disease [standardized mortality ratio (SMR) 121, 95 % confidence interval (95 % CI) 102—145], other cardiovascular diseases (SMR 112, 95 % CI 82—150), cancer (SMR 115, 95 % CI 97—136), other diseases (SMR 119, 95 % CI 94—149), and external causes (SMR 131, 95 % CI 113—153). For specific cancer sites, increases were seen for pancreatic cancer, urinary cancer outside the bladder, and pleural mesothelioma.

Key terms: asbestos, car repair, carbon monoxide, ischemic heart disease, mesothelioma, occupation, pancreatic cancer, petrochemical substances, polycyclic aromatic hydrocarbons, urinary cancer.

The work environment of auto mechanics involves potential exposure to asbestos, mineral oils, solvents, paint pigments, anticorrosive substances, and automobile exhaust. The literature on work-related health hazards is sparse regarding auto mechanics. Increased risks of both bladder cancer and lung cancer have been reported (1—3). In addition a few cases of malignant mesothelioma have been reported for auto mechanics, especially among persons employed in brake service centers (3—5). With regard to other occupational groups whose exposure may resemble that of auto mechanics, increased cardiovascular mortality has been reported for motor vehicle examiners (6), whereas increased mortality from digestive cancer has been found among automobile manufacturing workers and other metal workers (7, 8).

The actual study was set up to investigate further the potential health hazards associated with the complex exposure situation typical for the work environment in Danish car repair workshops. Malignant neoplasms of the respiratory system, the urinary system, and the upper digestive organs were anticipated to be of particular interest, together with cardiovascular diseases.

Subjects and methods

The research design was that of a historical cohort study in which the exposed part of the cohort was compared with the unexposed part in terms of cause-specific mortality through a ten-year period of follow-up. Auto mechanics constituted the exposed part of the study cohort. The comparison population, ie, the unexposed part of the study cohort, was made up of other specific groups of skilled workers.

The members of the study cohort were identified from the files of a nationwide census carried out in Denmark on 9 November 1970. Self-reported occupation, trade, industry, and employment on the day of the census was recorded for all the Danish inhabitants older than 14 years of age. These data were used to select the persons included in the study.

The study comprised only skilled workers and apprentices, only men between 15 and 74 years of age, and only persons who were occupationally active (ie, employed) on the day of the census. Everybody with the title "auto mechanic" or "mechanic, employed at a car-repair workshop" was included as an exposed person. As unexposed persons all men with one of the following job titles were included (proportion of total comparison group in parentheses): carpenter (45 %), electrician (32 %), instrument maker (13 %), dairyman (5 %), upholsterer (3 %), or glazier (2 %). Table 1 shows the number of exposed and unexposed persons in ten-year age groups.

The Danish National Bureau of Statistics has linked the records of the 1970 census with the current central register of persons and the national register of deaths [publications numbers 37 (1979) and 41 (1985) from the Danish National Bureau of Statistics, both in Danish]. This procedure has enabled the total census population to be followed for 10 years. The actual study cohort formed part of the census population and was traced by the use of the existing register linkage. The study persons were traced until 8 November 1980 or till death or emigration prior to this date. The follow-up data are shown in table 2. The auto

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