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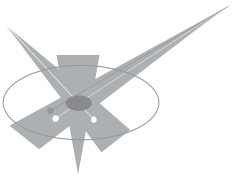

Review Paper

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Modifiable risk factors for the prevention of lung cancer

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Summary

Background Lung cancer is the most frequent malignant disease worldwide. In 2002, the number of new lung cancer cases was estimated at 1.3 million, which makes over 12.4% of all new cases of neoplasm registered all round the globe. It is also the leading cause of death from cancer.

Aim The objective of this paper was to provide a review of some modifiable risk factors for lung cancer.

Materials/Methods Data sources were MEDLINE from January 1950 to November 2006, title in the field. Search terms included: lung cancer, tobacco smoke, social class, diet, alcohol consumption and physical activity terms. Book chapters, monographs, relevant news reports, and Web material were also reviewed to find articles.

Results The results of the literature review suggest that smoking is a major, unquestionable factor of lung cancer risk. Exposure to environmental tobacco smoke (ETS) and social class could also play a role in the occurrence of the disease. Diet, alcohol consumption and physical activity level are other important but less extended determinants of lung cancer.

Conclusions Effective prevention programmes against some of the lifestyle-related factors for lung cancer, especially against smoking, must be developed to minimize potential health risks and prevent the future cost of health.

Key words **lung cancer • risk factors • prevention**

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Background

Lung cancer has been the most common cancer in the world since 1985. With a total number of 1.3 million new cases and 1.1 million deaths per year estimated worldwide, lung cancer is ranked highest with respect to morbidity and mortality among malignant neoplasms. In the year 2002, lung cancer made up 12.4% of cancer cases and accounted for 17.6% of all cancer-related deaths on the world scale [1].

Survival from lung cancer has shown no discernible improvement for more than 20 years. This is because the majority of patients have advanced disease when they are diagnosed and curative treatment is not possible. Five-year survival rates for lung cancer are consistently poor at 7–21%. The average survival in Europe is 10%, not much better than the 8.9% observed in developing countries [1].

The incidence and mortality rates of lung cancer vary among countries and follow the pattern of tobacco smoking a few decades earlier. The highest values can be noted in highly developed countries, particularly in Eastern Europe, and among Afro-Americans in the United Sates. In women, the highest incidence rates are recorded in North America and Northern Europe [1,2]. Although the rate of men dying from lung cancer is declining in western countries, it is actually increasing in women due to the increased take-up of smoking by this group.

Lung cancer is the major neoplastic disease in men; however, a rapid increase in incidence of cancer at this site has recently been observed in the population of women. This tendency can be attributed to lifestyle changes in this group, mostly to increasing prevalence of tobacco smoking [3]. The World Health Organization has estimated that lung cancer deaths will rise in virtually all industrialized countries, largely due to smoking and unhealthy diet [4].

Although cigarette smoking accounts for the vast majority of lung cancer cases, different factors may also play a role. Other risk factors involved in lung cancer development include environmental tobacco smoke, social class, dietary habits, alcohol consumption, physical activity, air pollution and occupational exposures (Table 1).

This article presents a review of the association between certain modifiable characteristics and the risk for lung cancer in humans, using information derived primarily from epidemiological studies. Recently published reviews and large well-designed original articles were preferred to form the basis of the present paper.

Table 1. Modifiable risk factors for lung cancer.

Factor	Evidence linking factor with lung cancer
Cigarette smoking	Strong
Occupational exposure	Strong
Environmental tobacco smoke	Strong
Alcohol consumption	Possible
Low fruit and vegetable intake	Possible
High-fat diet	Possible
Physical inactivity and excess body weight	Possible
Urban air pollution and indoor smoke from coal fires	Possible

Data sources were MEDLINE from January 1950 to November 2006, title in the field. Search terms included: lung cancer, tobacco smoke, social class, diet, alcohol consumption and physical activity terms. Book chapters, monographs, relevant news reports and Web material were also reviewed to find articles.

Modifiable risk factors for lung cancer

Social class

Over many years, social determinants of health have aroused much interest among epidemiologists. In this domain, we can also encounter publications on the relationship between lung cancer and the level of education. The majority of those reports show higher lung cancer morbidity in persons with a lower social status, and thus with a lower level of education.

It is likely that unhealthy lifestyle, especially smoking habit (frequency and intensity of inhalation), much more common among less educated people, may explain this observation. It is difficult to separate the true effect of socioeconomic factors from the confounding effects that they introduce, especially from smoking habits that are highly related to social class [5,6].