SOCIOECONOMIC DIFFERENTIALS IN LUNG CANCER RISK IN MUMBAI

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Background: Inconsistency in social status and its impact on health have been a focus of research since long. Many studies have shown that people with lower socioeconomic status have higher lung cancer mortality than those with higher status. The most obvious explanation for these differentials is that lower socioeconomic status is directly correlated with the greater extent of smoking habits. Extensive evidence shows that 98% of all male lung cancer deaths occur among those who have smoked (Doll R. et.al.1981, Koo L.C et.al., 1990). However, socioeconomic differences in lung cancer mortality seem to persist within the different levels of current and former smokers. Smoking is an individual habit but is greatly influenced by the environment in which we live. Also they are persistent due to the inadequate adjustment for smoking and to specific occupational exposure. Total lifetime exposure to tobacco smoke can be assessed on the basis of number of cigarettes smoked and the age at initiation of smoking. Also dietary patterns are found to play an important role in the etiology of lung cancer (Paul Brennan et. al., 1999).

Objective: To evaluate the differences in lung cancer incidence in the city of Mumbai based on smoking habits and other lifestyle characteristics.

Source of data: Indian Cancer Society, Bombay Cancer Registry (2000-2005)

Methodology: Case-Control study design. All lung cancer patients registered either as a new case or a follow-up case or a referred case registered between the years 2000-2005 in any of the hospitals of Mumbai coming under Indian Cancer Society (ICS), Bombay Cancer Registry is taken for the analysis. The registry collects data on the following socioeconomic and demographic variables on a continuous basis- Age, sex, religion, marital-status, mother-tongue, monthly income, earning members, family size, education, occupation, employment history and locality. Also information related to behavioural factors like tobacco intake both chewing and smoking habit (frequency and duration), alcohol intake (frequency and duration) and dietary patterns (veg. /non veg.) are also collected. Eighty percent of the cases registered under ICS are having complete detailed history of demographic and clinical extent of patients from the time of incidence to death or surviving. Information related to behavioural factors is not available for all cases as ICS collects information from Mumbai Municipal Corporation hospitals, private hospitals and nursing homes. Private nursing home accounts for about 40 percent of cases and they provide with the minimum information on socioeconomic, demographic and clinical variables to the social worker of ICS. Also municipal hospital data consists of post death records where only limited information is available in death certificate. So data on behavioural factors are missing in more than half of the registered cases. In all 2865 histologically confirmed lung cancer cases were registered in (2000-05) in Greater Mumbai. Out of these 1321 cases were analyzed with the assumption that the missing variables follow the same distribution pattern as that of the available information. Taking age distribution as a standard variable, the missing values were checked and assigned in order to ensure the generalization. An equal number of matched controls according to age and sex (± 5 years) were selected from the general population who visit any of the four voluntary testing centers in the city of Mumbai. Bivariate and multivariate logistic regression analyses were carried out to study the differentials.

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Results: The average age at diagnosis of lung cancer cases was 61.1 years (SD 12.8) and the average age of controls was 62.3 years (SD 12.9). There were 76% males and 24% females among the cases. An inverse association between lung cancer and highest level of education was found after adjustment for smoking, alcohol and dietary intake. The analysis reveals that the risk of lung cancer decreased significantly with the increase in education levels both for males (OR 0.76; 95% CI: 0.42-1.42) and females (OR 0.54; 95% CI: 0.23-1.25). Compared with high income adequacy, an increased risk was found among low income males and females with OR of 1.63 (95% CI: 1.02-2.59) and 1.49 (95% CI: 0.60-3.70), respectively. When compared with the area of living, both males and females living in city area were found to be at increased risk as those living in suburb and extended suburbs.

When compared with male never smokers, the past smokers (OR: 17.16; 95% CI: 8.51-34.63) and current smokers (OR: 27.38; 95% CI: 13.09-57.27) were found to be at increased risk of lung cancer. A similar trend was seen among females, though the number of current female smokers was not too large as compared to males. Odds ratio increased with the increase in number of cigarettes smoked among males but among females it showed a decreasing trend. The main reason for this would be that the number of cases in each category among females was too small. The strong correlation was also found with early age at initiation of smoking among males (OR: 16.30, 95% CI: 7.87 - 33.76). The positive association was also found between chewing tobacco and lung cancer occurrence both among males and females. The analysis also revealed that people consuming non-veg, spicy and hot food were found to be at increased risk of lung cancer than people eating veg, non-spicy and moderate food.

So we can say that socioeconomic inequalities were found to play an important role in the occurrence of the disease.

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