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THE MORTALITY OF DOCTORS IN RELATION TO THEIR SMOKING HABITS

A PRELIMINARY REPORT

BY

RICHARD DOLL, M.D., M.R.C.P.

Member of the Statistical Research Unit of the Medical Research Council

AND

A. BRADFORD HILL, C.B.E., F.R.S.

Professor of Medical Statistics, London School of Hygiene and Tropical Medicine; Honorary Director of the Statistical Research Unit of the Medical Research Council

In the last five years a number of studies have been made of the smoking habits of patients with and without lung cancer (Doll and Hill, 1950, 1952; Levin, Goldstein, and Gerhardt, 1950; Mills and Porter, 1950; Schrek, Baker, Ballard, and Dolgoff, 1950; Wynder and Graham, 1950; McConnell, Gordon, and Jones, 1952; Koulumies, 1953; Sadowsky, Gilliam, and Cornfield, 1953; Wynder and Cornfield, 1953; Breslow, Hoaglin, Rasmussen, and Abrams, 1954; Watson and Conte, 1954). All these studies agree in showing that there are more heavy smokers and fewer non-smokers among patients with lung cancer than among patients with other diseases. With one exception (the difference between the proportions of non-smokers found by McConnell, Gordon, and Jones) these differences are large enough to be important. While, therefore, the various authors have all shown that there is an "association" between lung cancer and the amount of tobacco smoked, they have differed in their interpretation. Some have considered that the only reasonable explanation is that smoking is a factor in the production of the disease; others have not been prepared to deduce causation and have left the association unexplained.

Further retrospective studies of that same kind would seem to us unlikely to advance our knowledge materially or to throw any new light upon the nature of the association. If, too, there were any undetected flaw in the evidence that such studies have produced, it would be exposed only by some entirely new approach. That approach we considered should be "prospective."* It should determine the frequency with which the disease appeared, in the future, among groups of persons whose smoking habits were already known.

Method of Investigation

To derive such groups of persons with different smoking habits we wrote in October, 1951, to the members of the medical profession in the United Kingdom and asked them to fill in a simple questionary. In addition to giving their name, address, and age, the doctors were asked to classify themselves into one of three groups—namely, (*a*) whether they were, at that time, smoking; (*b*) whether they had smoked but had given up; or (*c*) whether they had never smoked regularly (that is, had never smoked as much as one cigarette a day, or its equivalent in pipe tobacco, for as long as one year). All present smokers and ex-smokers were asked additional questions. The former were asked the ages at which they had started smoking and the amount of tobacco that they were smoking, and the method by which it was consumed, at the time of replying to the questionary. The ex-smokers were asked similar questions but relating to the time at which they had last given up smoking.

The questionary was intentionally kept short and simple in the hope of encouraging a high proportion of replies, without which the inquiry must have failed. In a covering letter the doctors were invited to give any information on their smoking habits or history which might be of interest, but, apart from that, no information was asked for about previous changes in habit (other than the amount smoked prior to last giving up, if smoking had been abandoned). It was, of course, realized that the habits of early adult life might well be more relevant to the development of a disease with a long induction period than the most recent habits. On the other hand, we regarded the procedure adopted as justified, not only because of the extreme difficulty of obtaining sufficiently accurate records of past smoking habits, but also because of the experience of our previous retrospective investigation (Doll and Hill, 1952). This investigation, in which nearly 5,000 patients were interviewed, had shown that the classification of smokers according to the amount that they had most recently smoked gave almost as sharp a differentiation between the groups of patients with and without lung cancer as the use of smoking histories over many years—theoretically more relevant statistics, but clearly based on less accurate data.

From their replies to the questionary the doctors were classified into broad groups according to age, the amount

*O.E.D. Characterized by looking forward into the future. (Leigh Hunt: "He was a retrospective rather than a prospective man.")