CIGARETTE SMOKING AND BRONCHIAL CARCINOMA

EFFECT OF THE ASSOCIATION UPON SMOKING HABITS OF A GROUP OF DOCTORS

BY

D. A. PYKE, M.B., M.R.C.P.

Senior Medical Registrar, Radcliffe Infirmary, Oxford

Doll and Bradford Hill (1950) demonstrated a significantly higher incidence of carcinoma of the bronchus among those who smoked cigarettes than among those who did not. This finding has been confirmed and amplified here and in America, and public endorsement has been given by the Minister of Health and the Secretary of the Medical Research Council.

What effects have these statements had? Do people now smoke less?

In an attempt to answer these questions a small inquiry has been made of 217 doctors. It was thought that doctors would be sensitive to scientific argument and might be among the first to reduce their smoking in the face of evidence of its danger; they are more likely to be familiar with the facts making up this evidence and with the character of the disease.

Material and Methods

All the 217 doctors working in the hospitals in Oxford were sent a short questionnaire. Nine-tenths of them were men; their ages ranged from about 24 to 65, about two-thirds were under 40.

DO YOU SMOKE CIGARETTES?

If "Yes," for how many years have you smoked?

Do any of these statements represent your views?

(i) I am not satisfied with the evidence linking cigarette smoking with carcinoma of the bronchus.

(ii) I am satisfied with the evidence and hope to give up smoking, but have not yet been able to bring myself to do so.

(iii) I am satisfied with the evidence but do not intend to give up smoking.

(iv) Other.

If "No," have you ever smoked (by which is meant at least one cigarette a day for a year or more)?

If you have once smoked but have given it up, can you give the date (as precise as possible) of stopping?

What was your reason for stopping?

Non-smokers were also asked to say whether they were satisfied or not with the evidence linking smoking with carcinoma of the bronchus.

Pipe and cigar smoking was not considered, nor was the number of cigarettes smoked. Figures of the national consumption of cigarette tobacco and of the number of smokers in the country were also obtained.

Results

Replies were received from 211 (97%) doctors. Less than half of them smoked cigarettes. About a quarter had discontinued the practice, and another quarter had never smoked (Table I).

TABLE I

	211 Doctors	General Population (U.K.)*
Smoke now	47.4% (100)	57% (men 72%, women 42%)
Once smoked	25.1% (53)	43% (.. 28%, .. 58%)
Never	27.5% (58)	

* Figures calculated from the Hulton Readership Survey and the 1% sample of the 1951 census.

Changes in the Number of Smokers

Smoking Begun.—In the last eight years 11 of the 211 doctors have started to smoke cigarettes. Five began to do so eight years ago, one seven years ago, two six years ago, one five years ago, one four years ago, one two years ago.

Smoking Stopped.—In the last eight years 40 of the doctors have stopped smoking. The dates of stopping were: Before September, 1946, 13; September–December, 1946, 1; 1947, 6; 1948, 6; 1949, 2; January–September, 1950, 3; October–December, 1950, 2; 1951, 3; 1952, 3; 1953, 5; 1954, 9. In the four years immediately before the publication of Doll and Bradford Hill's first paper (September, 1946, to September, 1950), 18 persons stopped smoking. In the next four years, ending at the time of the survey (October, 1954), the number was 22.

Reasons for Stopping Smoking.—The 53 members of this group gave 63 reasons for having stopped smoking (Table II).

TABLE II

Minor ill-health (e.g., cough, sore throat)	15
Expense	13
Lack of desire	8
Risk of carcinoma	8
After or during an illness	6
Unclassified	13

The 13 doctors giving expense as a main reason had stopped smoking in 1947 (2), 1948 (1), 1950 (2), 1951 (1), 1952 (2), 1953 (1), 1954 (4).

National Figures.—The decline in the number of smokers among this group of doctors is not reflected in the national figures (Table III).

TABLE III.—Number of Cigarette Smokers and Their Weekly Consumption per Head (United Kingdom)*

	No. of Cigarette Smokers (Millions)			Average No. of Cigarettes Consumed Weekly per Cigarette Smoker		
	Males	Females	Total	Males	Females	Total
1947	11.7	8.4	20.1	113	49	97.9
1948	11.8	7.8	19.6	105	42	79.9
1949	11.8	7.6	19.4	99.4	45.5	78.3
1950	11.9	7.3	19.2	100.1	45.5	79.3
1951	11.8	7.3	19.1			
1952	11.4	7.5	18.9	105	46.9	81.9
1953	11.2	7.5	18.7	100.8	49.7	80.3
1954	11.4	7.9	19.3	102.9	51.1	81.7

* Based on the Hulton Readership Survey. Figures are not available for the years before 1947 and only abbreviated ones for the year 1951.

The fall in the number of cigarettes smoked, but only slightly in the number of smokers, between 1947 and 1948 may have been due to the large tax increase in the budget of 1947. Since then, and during the time when an association between smoking and carcinoma has been known, there has been very little change. Figures of the total cigarette tobacco consumption (in lb. per annum per head of the population of the United Kingdom)† show the same steadiness in recent years (Table IV).

TABLE IV

1946	1947	1948	1949	1950	1951	1952	1953	1954
4.6	4.0	3.7	3.6	3.6	3.8	3.8	3.9	4.0

Opinion of the Evidence Linking Smoking and Bronchial Carcinoma

Opinions of the validity of this evidence were given by 193 doctors. Rather more than half were satisfied with the evidence of an association between smoking and carcinoma of the bronchus, but the figures differ considerably among the smokers, non-smokers, and former smokers (Table V).

If the 193 are divided into (1) present and past smokers and (2) non-smokers, and their opinions examined separately it is seen that in group (1) 76 were satisfied and 57

† Based on estimates provided by the Board of Trade.

TABLE V

Opinion of the Evidence	Smokers	Former Smokers	Non-smokers	Total
Satisfied ..	46	30	34	110 (56.5%)
Not satisfied ..	45	12	5	62 (32.5%)
Undecided ..	9	3	9	21 (11.0%)

unsatisfied with the evidence, a ratio of 1.3 to 1. In group (2) the figures are 34 and 5, a ratio of 6.8 to 1 in favour of accepting the evidence. Thus, excluding those who were undecided, over five times as many non-smokers as present and former smokers accepted the evidence.

Of the 46 smokers who do accept the evidence 14 hope to discontinue smoking and 32 do not intend doing so.

Discussion and Conclusions

Less than half of this small group of doctors smoke cigarettes, a lower proportion than among the general population. The proportion of those who have never smoked (27.6%) corresponds closely to Doll and Bradford Hill's (1954) finding of 28.5% of non-cigarette smokers among male doctors aged 35-44.

In the present group of 211 doctors the number who smoke cigarettes is gradually declining. Eight years ago it was 129, now it is 100.

To judge from the reasons which those who have discontinued smoking give for doing so and from figures of national tobacco consumption it appears that increased cost is a considerable factor in reducing cigarette smoking, but that the risk of cancer is not (although it may be a deterrent to starting the habit). This is supported by the fact that the number of doctors giving up smoking since an association with bronchial carcinoma was discovered has not increased. It seems, therefore, that further demonstration of this association will not lead to many more doctors stopping smoking.

The proportion of those who accept the evidence of an association between smoking and carcinoma of the bronchus is so much higher among the non-smokers than among the smokers, present and past, that personal prejudice may have played some part in shaping these opinions. Possibly the pleasures of tobacco addiction persuaded some of the smokers to discount the evidence of its dangers.

Summary

The 217 doctors working in the hospitals of Oxford were questioned about their cigarette-smoking habits, and 211 (97%) replied: 47.4% smoke cigarettes, 25.1% once smoked, and 27.5% have never done so. The proportion who smoke is gradually declining, but the number of doctors giving up smoking has not increased since the discovery of an association between smoking and carcinoma of the bronchus. Figures for national tobacco consumption and number of smokers have shown no decline since 1950, when Doll and Bradford Hill's first paper appeared.

Only a little over half (56.5%) of the doctors were satisfied with the evidence linking carcinoma of the bronchus and smoking; but the proportion was more than five times higher among the non-smokers than among the smokers. Perhaps the smokers were persuaded by their fondness for tobacco to discount unpalatable evidence.

I am most grateful to the 211 doctors for their co-operation and to Dr. A. M. Cooke for his criticisms.

REFERENCES

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PHYSIOLOGICAL PRINCIPLES IN THE TREATMENT OF THE UNCONSCIOUS PATIENT*

BY

WILLIAM W. MUSHIN, M.A., M.B.
F.F.A.R.C.S., D.A.

Professor of Anaesthetics, Welsh National School of Medicine, Cardiff

The title of this paper crystallizes the main concern of the anaesthetist so far as the administration of general anaesthesia is concerned. He deliberately administers combinations of powerful drugs to produce unconsciousness of varying depth. His skill lies not only in the administration of these drugs, but in the treatment of the resulting unconscious state. The essential problems attendant on unconsciousness *per se* are the same whatever the cause, be it anaesthesia or head injury or barbiturate overdose. There therefore seems to be some justification for extending the discussion beyond the confines of anaesthesia to include unconsciousness in general. As for the physiological principles which underlie the treatment of the unconscious state, the need for them here is no less than in the treatment of other pathological states—indeed more, since a disregard of such principles so easily leads to permanent damage or death.

What is Unconsciousness?

"Unconsciousness" is a term applied to three separate states which have much in common with each other and yet differ fundamentally in their aetiology and prognosis. They are natural sleep, anaesthesia, and coma. In each of these the patient loses his power of perception of the world in which he lives, and on recovery has no memory of events which took place during that time. Though he may respond in a reflex manner to stimuli, such reflex activity leaves no trace in his conscious memory. Natural sleep is distinguished by the fact that it occurs in the absence of disease or the administration of drugs. It terminates spontaneously after a varying interval, but in any case is easily interrupted by the application of external stimuli of very moderate intensity. Anaesthesia differs from coma only in the fact that it is to a great extent reversible and controllable by the anaesthetist. It is the result of the deliberate administration of drugs or of physical agencies such as cold or electrical currents. The term "coma" is best reserved for states of unconsciousness associated with disease, injury, or overdose with certain drugs. It may on occasion be reversible, but it is generally not controllable. The two differ little so far as the physical state of the patient is concerned, and it would be generally impossible on clinical examination alone, and without knowing the circumstances, to say whether the state is one of anaesthesia or of coma.

The depth of unconsciousness may vary widely from patient to patient, and is determined by the individual ability to respond to stimuli of varying intensity. When a patient responds reflexly to mild painful stimuli his unconsciousness is said to be light, but in profound unconsciousness it may be that no stimulus of any kind produces a response and only a beating heart and active respiration show that the patient is still alive.

*Based on a lecture given before the Royal Faculty of Physicians and Surgeons of Glasgow on January 19, 1955.