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SMOKING HABITS OF MEDICAL AND NON-MEDICAL UNIVERSITY STAFF

CHANGES SINCE R.C.P. REPORT

BY

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On March 7, 1962, a Committee of the Royal College of Physicians published the report *Smoking and Health* which reviewed the evidence concerning the contribution of cigarette smoking to the occurrence of cancer of the lung and other diseases. It pronounced unequivocally that the case against prolonged and heavy cigarette smoking was proved beyond all reasonable doubt. This report received very widespread publicity in the press, on radio, and on television; more than ever before it appeared that public awareness had been alerted to this particular threat to health. Among the spate of exhortations a frequent theme was the need for teachers to encourage young people, by precept and example, not to acquire this habit.

It seemed opportune, therefore, to seize the occasion presented by this natural experiment in order (a) to ascertain the smoking habits of all members of a university teaching staff, (b) to inquire whether any significant change in habits of cigarette smoking occurred during the four weeks following the publication of the report, and (c) to discover whether any observed reduction in cigarette smoking was still in evidence after an interval of three months.

At the outset certain information about smoking habits was already available. The R.C.P. (1962) Report *Smoking and Health* includes details of the smoking habits of all men in the U.K. aged 35 and over in 1958 and those of a sample of male doctors in the same age-group. About one-quarter of U.K. males were non-smokers at that time and just over one-half smoked cigarettes only. In contrast, half of the male doctors were non-smokers and less than one-third smoked only cigarettes. The report concludes from this that doctors smoke less because they are specially aware of the harmful effects of cigarette smoking. It further conveys the impression that this low smoking rate is specific to doctors because it also states that the cigarette consumption in social classes I, II, III, and V are about the same.

Cartwright *et al.* (1959) found in their sample of Edinburgh adults of 21 years and more that approximately

one-quarter of the men were non-smokers. This work suggested, however, that there was a difference in smoking habits within social classes and pointed out that the lowest proportion of smokers occurred in the professional and black-coated group. The same finding of relatively low proportions of smokers in the professional groups has been reported by McArthur *et al.* (1958) and Lilienfeld (1959). The latter found in his New York sample that less than one-third of professional people smoked. Heath (1958) stated that non-smokers tended to enter scientific careers. It seemed, therefore, that the analysis of the smoking habits of a university teaching staff would be of special interest in view of the conflicting evidence in respect of smoking habits in different social groups.

Method

In the third week of April, 1962, a questionnaire and an explanatory letter was mailed to each of the 1,190 members of the graduate staff of the University of Edinburgh. The letter referred to the interest felt in the effects of the R.C.P. Report, and the questionnaire inquired about the smoking habits in the first week of March and in the first week of April. Respondents were asked to give details of efforts they might have made to modify their smoking during this time. To this questionnaire 1,087 (91%) replied.

Three months after the publication of the report a second questionnaire was sent to those who had modified their smoking in the first week of April. This inquiry dealt with smoking habits in the first week of June and sought to determine the extent to which the modifications of April had been maintained. Respondents were specifically asked why they had changed their smoking pattern, since it was apparent that Lent, holidays, or illness, for example, could have been incidental and temporary reasons for modification, and quite unrelated to any possible effects of the Report. Reminders were sent where necessary, and the second questionnaire evoked a 90% response.

Results

As the report compares the smoking habits of male doctors with the rest of the population, in this survey the respondents have been classified as medical graduates and other (non-medical) graduates. Nine hundred and fifty male graduates replied, of whom 289 were medical and 661 were non-medical; 137 female graduates replied, of whom only 18 were medical and 119 were non-medical.

Smoking Habits in First Week of March

The smoking habits of the Edinburgh graduate staff before the publication of the report are shown in Table I. These are compared with the figures of the 1958 U.K. male population survey and the 1961 sample of doctors referred to in the report. The actual

TABLE I.—*Smoking Habits of Males Aged 35 and Over: Present Study Compared with Figures of R.C.P. Report*

	Non-Smokers		Cigarettes Only		Cigarettes/ Pipes/ Cigars		Pipes/ Cigars Only	
	No.	%	No.	%	No.	%	No.	%
Edin. medical ..	117	51	45	20	29	12	29	17
Edin. non-medical	207	47	121	27	35	8	77	18
U.K. males, 1958	—	24	—	54	—	10	—	12
Doctors, 1961 ..	—	50	—	29	—	10	—	11

numbers for the graduate staff have been included to indicate the overall reduction due to excluding those under 35 years and those who did not state their age.

The smoking habits of the graduate staff are the same, whether medical or non-medical. About half are non-smokers and less than one-third smoke only cigarettes. This is very similar to the pattern for doctors but differs markedly from the general population habits.

Table II compares the daily cigarette consumption of the medical and non-medical graduate staff with that

TABLE II.—*Smokers: Daily Cigarette Consumption of U.K. Males, 1958, and Edinburgh Non-medical and Medical Males*

Male Smokers	Up to 10 %	11 to 20 %	More than 20 %
Edin. medical	28	25	47
Edin. non-medical	28	37	35
U.K., 1958	39	42	19

of the male general population referred to in the report. The proportion of cigarette smokers who smoke more than 20 a day is approximately twice as high among the graduate staff as in the general population. Medical men have the highest proportion of heavy smokers, but not significantly more than non-medical graduates.

Prohibition of Smoking in Public Situations.—Eighty-five per cent. of non-smokers and 75% of smokers stated that they would welcome a restriction on smoking in certain public situations. Most respondents chose a combination of places, and those most frequently specified are shown in Table III. The pattern of emphasis is similar between the smokers and non-smokers, although non-smokers were more inclined to eliminate smoking in restaurants and long-distance transport.

TABLE III.—*Attitudes of Smokers and Non-smokers to Prohibition of Smoking in Specified Situations*

Situation	All Graduate Staff	
	Smokers (n=509) %	Non-smokers (n=578) %
Theatres and cinemas	68	81
Short-distance transport	52	54
Long-distance transport	20	45
Restaurants	28	49
Public houses	8	16
Work situations	14	28
Shops	48	44

Smoking Habits in First Week of April

Table IV shows the changes in smoking habits which occurred between the first week of March and the first week of April for the total graduate staff.

TABLE IV.—*Total Graduate Staff: Changes in Smoking Habits*

	Non-smokers		Cigarettes		Pipes/ Cigars Only	
	No.	%	No.	%	No.	%
1st week March	578	53	363	34	146	13
1st week April	602	55	326	30	159	15

Thirty-seven (10.2%) cigarette smokers stopped the habit. Thirteen of these took to smoking pipes and 24 stopped smoking altogether.

Table V shows the modifications in forms of smoking by sex and faculty of graduate staff of all ages. There was a reduction of 3.2% among male cigarette smokers. A higher proportion of these were non-medical than

medical graduates. Non-medical males tended to stop smoking altogether, while medical males tended to adopt pipes or cigars.

TABLE V.—*Forms of Smoking in Sex and Faculty Groups in the First Weeks of March and April*

Staff Totals	All Staff (1,087)		All Males (950)		All Females (137)		All Non-medical Males (661)		All Medical Males (289)	
	Mar. %	Apr. %	Mar. %	Apr. %	Mar. %	Apr. %	Mar. %	Apr. %	Mar. %	Apr. %
Non-smokers	53	+2.2	52	+2.3	60	+1.5	52	+3.1	52	+0.3
Cigarettes only	25	-3.1	23	-3.2	39	-1.5	24	-3.2	21	-3.1
Cigarettes/ pipes cigars	9	-0.3	10	-0.4	1	0.0	9	-0.6	12	+0.4
Pipes/cigars	13	+1.2	15	+1.3	0	0.0	15	+0.7	15	+2.4

Changing the form of smoking was not, of course, the only method of modifying cigarette smoking. Many graduates reduced the number smoked each day. This is shown in Table VI. There was an increase in the lowest consumption rate (up to 10 cigarettes) of approximately 10% in all groups. The highest consumption rate (more than 20 cigarettes) was reduced by approxi-

TABLE VI.—*Changes in Daily Consumption Rates Among Cigarette Smokers**

	All Males (216)		All Females (53)		All Non-medical Males (156)		All Medical Males (60)	
	Mar. %	Apr. %	Mar. %	Apr. %	Mar. %	Apr. %	Mar. %	Apr. %
Up to 10 cigarettes	28	+8.6	47	+11.6	28	+9.1	28	+7.0
11-20 cigarettes	34	+0.8	38	-10.2	37	+0.1	25	+4.4
20 plus cigarettes	38	-9.4	15	-1.4	35	-9.2	47	-11.4

* Figures refer to those who smoked cigarettes only.

mately 10% in each group, except for the female graduate smokers, of whom only eight smoked more than 20 a day. The highest reduction in excessive smoking occurred in the group of male medical graduates. There were other respondents who reduced or otherwise made efforts to modify their smoking, but not to the extent of being transferred to another category in Table VI. In all, 165 (45%) of the 363 cigarette smokers tried to reduce their consumption, and of these 101 succeeded. Nineteen (13%) of the 146 pipe/cigar smokers tried to reduce, and of these 8 succeeded.

Smoking Habits in First Week of June

The June inquiry considered only the 109 members of graduate staff who had modified their smoking for any reason since the publication of the report. Ninety-eight replied, of whom 91 were cigarette smokers and 7 smoked pipes or cigars only. Sixty-three per cent. of all who had modified their smoking by April had succeeded in maintaining this reduction in June. The proportions who kept up a modified smoking pattern were similar for men and women and for medical and non-medical graduates. Possible factors relating to success in reduction of smoking were examined.

Method of Modifying Smoking.—From Table VII it can be seen that nearly all those who gave up smoking altogether managed to remain non-smokers. However, of those who had aimed merely to reduce their daily consumption or to change over to pipes or cigars fully a half had returned to their previous level of cigarette consumption.

TABLE VII.—*Methods of Modifying Smoking*

First Week of April Form of Modification	Total	Position in first week of June. Maintained.	
		No.	%
Gave up smoking	32	29	91
Reduced	45	22	49
Changed form	21	11	52
Total	98	62	63

Form of Smoking.—Of 91 cigarette smokers, 58 (64%) maintained their reduction: of 7 pipe/cigar smokers, 4 (57%) did so. This shows no significant departure from the expected.

Daily Consumption of Cigarettes.—The effect of daily consumption on ability to maintain the reduction in the number of cigarettes smoked is shown in Table VIII. Those who were originally excessive smokers of more than 20 a day had the greatest difficulty in maintaining a reduction. More than half failed to do so, while approximately three-quarters of those who originally smoked fewer than 20 a day succeeded in maintaining a reduction ($\chi^2=4.68$, 1 df, $P<0.05$).

TABLE VIII.—*Effect of Daily Consumption on Ability to Maintain a Reduction in Number of Cigarettes Smoked**

Daily Consumption	Total	Position in First Week of June. Maintained.	
		No.	%
Up to 10	18	13	72
11–20	28	21	75
20 plus	30	14	47
Total	76	48	63

* Figures refer to those who smoked cigarettes only.

Medical and Non-medical Graduates.—Similar proportions of medical and non-medical graduates of both sexes succeeded in maintaining a reduction.

Age.—Table IX shows that readiness to modify smoking habits diminishes with age. Twenty-six per cent. of those below the age of 35 initially modified their smoking, in contrast to only 12% of those over the age of 55. After three months two-thirds of the younger graduates had succeeded in maintaining a reduction, while two-thirds of the older graduates had failed to do so.

TABLE IX.—*Smokers who Modified Their Habit: Position After Three Months, by Age*

Age-group	No. of Smokers in Age-group	Reduced Smoking		Position after Three Months. Reduction maintained	
		No.	%	No.	%
20–34	106	28	26	18	64
35–54	271	54	20	36	67
55 plus	113	14	12	6	43
Not stated	19	2	10	2	100

Royal College of Physicians Report.—Fifty-nine (60%) of the 98 respondents stated that they had been influenced by the report and had accordingly modified their smoking habits. The remainder gave a variety of reasons, among which changing habits during vacation, illness, Lent, and economic motives figured most prominently. There was no demonstrable difference between the proportions of medical and non-medical graduates who modified their smoking because of the report. Forty-seven of these had successfully adjusted their smoking habits to a maintained reduced level. Again there is no demonstrable suggestion that medical

graduates were more impressed by the report than non-medical graduates. This figure for successful modification of smoking habits as a direct effect of the report represents 9.2% of all smokers among the graduate staff.

Discussion

The Royal College of Physicians Report *Smoking and Health* compares the smoking habits of males of the United Kingdom general population and a sample of doctors. The differences are striking, and the report infers that a high rate of non-smoking is specifically associated with the medical profession. In this study the smoking habits of medical graduate members of Edinburgh University staff closely conform to those of the 1961 sample of doctors, but so do the smoking habits of graduate staff who are not doctors. At Edinburgh the same high rate of non-smoking is applicable to both medical and non-medical graduates. It is unlikely that a nation-wide change in smoking habits has occurred since the data in the report were collected; therefore it can be assumed that academics probably form a deviant group who smoke less. This finding is in agreement with those of McArthur *et al.* (1958), Cartwright *et al.* (1959), and Lilienfeld (1959).

The medical graduates provide more than their fair share of heavy smokers. Unfortunately the report does not include details of the daily consumption of cigarettes by doctors, so comparisons cannot be made. In this study there were twice as many heavy smokers among the graduate staff as in the general population. The percentage of doctors who smoked more than 20 cigarettes a day is higher than the corresponding figure for non-medical graduates. Attitudes to the prohibition of smoking in public places are of interest. The reactions of non-smokers to restrictions on smoking are understandable, but it may be a revelation to many to learn that two-thirds of the smokers would welcome its prohibition in theatres and cinemas, and that one-half would be willing to forgo smoking in local trains and buses and in shops.

By the beginning of April, 1962, many graduates had made an effort to alter their smoking habits, and most of these succeeded. As would be expected, the greatest proportions of those who tried to reduce their smoking were cigarette smokers. A few pipe and cigar smokers also modified their smoking habits. Almost one in every 10 cigarette smokers stopped the habit, most gave up smoking completely, and some, particularly doctors, changed to pipes or cigars. Many of those who did not give up cigarettes reduced the number smoked each day. The lowest consumption rate (up to 10 cigarettes a day) was increased by 10% and the highest consumption rate was decreased by 10%. The highest reduction in excessive smoking occurred among male doctors.

Two-thirds of all who had modified their smoking by April had succeeded in maintaining this reduction in June. From Table VII it is clear that complete withdrawal is the most effective way to maintain a desired change in smoking habits. Over 90% who chose to do this succeeded. It is probable that the conviction felt on the part of an individual who is able to stop smoking abruptly and completely also partly explains the capacity for perseverance with the change. Such a conviction, however, seemed to be equally distributed among non-medical and medical graduates. Heavy smokers encountered the greatest difficulty in smoking fewer cigarettes. More than half again became heavy

smokers within three months. Moderate or light smokers who reduced their daily consumption mostly managed to keep this up.

Cartwright *et al.* (1959), in their Edinburgh survey, found an unusually high proportion of men aged 55–64 who had smoked regularly in the past but had since given it up. In the present study of university staff in the same city it is shown that older members seemed less inclined to stop smoking. Fewer of the older graduates attempted to reduce their smoking, and of those who did few succeeded.

About two-thirds of the smokers who had modified their smoking habits said they had done so because of the findings of the Royal College of Physicians Report. Most of these managed to maintain their reduction. The final figure for successful modification of smoking habits as a direct effect of the report was 9.2% of all smokers among the University of Edinburgh graduate staff.

Surprisingly, although the numbers here considered were small, no higher a proportion of doctors than other academics managed to maintain a reduction. This conflicts with the evidence in the report and the stress laid in it upon the differential effect of the doctor's special knowledge of the risk of heavy smoking in reducing his own smoking habits. The conclusions to which this study seems to point are that if the report is correct in saying that medical graduates have stopped smoking more than the general population, this is more because they are graduates than because they are medical. Within professional groups doctors can claim no special merit: in their smoking habits they are no better—slightly worse—than their peers.

Summary

A survey of the smoking habits of the graduate staff of the University of Edinburgh is reported. In the first part of the study smoking habits immediately before and immediately after the publication of the R.C.P. Report *Smoking and Health* were compared. Later a second inquiry was directed to those who had reduced their smoking in order to see whether after three months the reduction was maintained.

Male medical and non-medical graduates have the same low rate of smoking; both smoke less than the general population and the same as United Kingdom male doctors.

There were twice as many heavy smokers among the graduate staff as in the general population. The percentage of heavy smokers was higher among male medical graduates than among graduates in other faculties.

Three-quarters of the smokers in the survey would welcome prohibition of smoking in certain public places.

After the report one-third of all smokers in the survey in some way modified their smoking. Older graduates did so less than younger graduates. The highest reduction in heavy smoking occurred among male doctors.

Two-thirds of all who had modified their smoking succeeded in maintaining this three months later. The most successful were those who stopped smoking altogether.

The R.C.P. Report successfully persuaded 9.2% of all smokers among the graduate staff to modify their smoking.

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DECLINE IN PRIMARY INFANTILE RENAL ACIDOSIS: AETIOLOGICAL IMPLICATIONS

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Primary renal tubular acidosis of infants is a transient disturbance in which a lowered plasma bicarbonate level is accompanied by a relatively alkaline urine, usually with a pH of more than 6.5. The clinical picture includes anorexia, vomiting, failure to thrive, constipation, dehydration, and hypotonia (Lightwood, 1935; Lightwood *et al.*, 1936; Butler *et al.*, 1936). In Great Britain the condition first reached prominence after the second world war; at least 90 cases were reported as occurring between 1947 and 1953 (Lightwood *et al.*, 1953; Carré *et al.*, 1954; Doxiadis, 1952; Buchanan and Komrower, 1958). Shortly afterwards attention was drawn to a local fall in incidence in the Newcastle area in England (Neligan, 1955). The object of the present inquiry was to see if this reduction was general and if epidemiological methods could help in aetiology.

Data

The report is based on a questionnaire sent in 1960 to the paediatric departments of 12 provincial undergraduate teaching centres in England, Scotland, and Wales; in London the inquiry was confined to two postgraduate teaching centres attached to the Institute of Child Health—namely, the Hospital for Sick Children and the Queen Elizabeth Hospital, Hackney. For the decade 1950 to 1959 information was sought on every new case of infantile renal acidosis regarding age at diagnosis, sex, lowest recorded plasma-bicarbonate level, and highest serum-chloride level. All the centres replied to the questionnaire, although Liverpool data for 1950 were not available. Of the total of 192 cases reported, 153 were chosen for analysis as being unequivocal cases. The omissions comprised: (a) 19 reported cases in which the minimum plasma-bicarbonate level was above 16 mEq/l.; (b) 16 cases in which coexistent hypercalcaemia was reported; (c) two infants who died before biochemical investigation was complete, though both showed nephrocalcinosis at necropsy; and (d) two siblings who showed symptoms very soon after birth and are thought to be examples of the persisting (Albright) type of primary renal acidosis (in process of preparation for publication by other workers).