Middle Articles

MEDICAL EDUCATION

Broadcast Television for Doctors—a First Evaluation

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Why Television ?

Today every doctor needs some means of continuing his professional education after he has left medical school. This continuance of education has become much easier for the hospital doctor than for the general practitioner, since the hospital doctor has frequent professional contacts and easy access to sources of medical information. Most general practitioners have become more or less divorced from their local hospitals, though a new beginning has been made with the many postgraduate medical centres in process of establishment or already in operation. In addition, half of Britain's general practitioners are in single-handed practice, and therefore are less likely to be able to attend courses and clinical meetings. Methods of providing medical information in the doctor's own home are needed. The classic method in this field is of course the medical journal. Alternative methods of home presentation of medical information investigated include tape-recordings (Graves and Graves, 1961) and television broadcasts (Engel, 1963 ; Roy, 1964 ; *B.M.J.*, 1965).

Open-circuit television broadcasts aimed at doctors began in the U.S.A. 14 years ago (Castle, 1963), and by 1965 some two dozen centres were broadcasting locally to doctors on U.H.F. educational channels in that country (Lewis, 1965). In spite of this effort surprisingly little information on the effects of these programmes is available (Castle, 1963 ; McGuinness *et al.* 1964 ; Robertson *et al.*, 1965). Programmes began in the United Kingdom in March 1963, when Scottish Television and the Glasgow Postgraduate Medical Board began a monthly series of programmes (Roy, 1964), which will continue and are now being re-broadcast in a number of areas. Information has not yet been published, however, on the effects of these transmissions (G. Shaw, personal communication, 1965).

This paper is a brief report of investigations into the effect of the "Medicine Today" programmes for doctors broadcast on the B.B.C.-2 channel and now on B.B.C.-1.

Programmes

The Association for the Study of Medical Education (A.S.M.E.) formed a Television Working Party (now called the Television Section of A.S.M.E.)¹ in 1963 to consider the role of television in medical education, and as a result of their recommendation A.S.M.E. approached the B.B.C. in 1964

with the idea of a medical programme directed at doctors. A "scrambled" programme was technically feasible but contrary to current legislation ; open broadcasts were the only alternative. The B.B.C. agreed to consider such a programme on the B.B.C.-2 channel, and in June 1964 conducted a survey of a sample 21,000 doctors then within the range of the B.B.C.-2 transmitters at Crystal Palace ; more than a quarter of the doctors possessed or were about to buy a B.B.C.-2 television set. Accordingly programme-planning went ahead, and generous grants of money and assistance from the Office of Health Economics and Smith Kline and French Laboratories Ltd. made a survey into the programme's effects possible. Throughout, suggestions regarding the programme content were put to the B.B.C. by members of the A.S.M.E. Television Working Party. The day-to-day production and presentation of the programmes was in the hands of Dr. C. M. Fletcher and my own.

The six programmes investigated to date were transmitted monthly from January to June 1965. The subjects dealt with are listed in Table I. Broadcasts were at 11 p.m. on Thursdays, and were repeated on the following Tuesday at lunch-time (1.25 p.m.). All programmes were pre-recorded on Video-tape and lasted 35 minutes. Notice of the first two programmes was confined to the medical press and the *Radio Times*, but, in addition, for the third and subsequent programmes an individual notice of the date and time of each broadcast was sent to every doctor who indicated he could receive B.B.C.-2. Within one week of each programme this group of doctors was sent a "Postscript" folder containing a résumé of the programme and suggestions for further information.

TABLE I.—*Items Broadcast in the Six Programmes*

- I. *Rehabilitation after strokes*; accidental hypothermia; pyelonephritis in children; enzymes in the diagnosis of myocardial infarction.
- II. *Chronic bronchitis and airways obstruction*; diagnosis of hypothyroidism; lead-poisoning in children.
- III. *Case conference (side-effects and damages of steroid therapy)*; phenylketonuria and galactosaemia; diuretics.
- IV. *Pain in the arm*; domiciliary obstetric kit.
- V. *Malabsorption*; eruptions on the feet.
- VI. *Early diagnosis of speech and hearing defects in children.*

The main item in each programme is given in italics; at east 20 minutes was spent on this item.

A vital factor in assessing any form of postgraduate education is of course cost. It is difficult to arrive at a firm figure for a television programme because of the doubtful fraction of studio expenses and overheads which should be included, but £1,800 to £2,500 per programme seems to be a reasonable estimate.

Investigation

The programmes were started with the idea of finding out how successful they might be in terms of viewing and learning. This operation is divided for convenience into three parts.

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¹ Members at 1 January 1965: Lord Brain (chairman), Mr. L. Able, Mr. D. C. Bowie, Professor B. M. Brooke, Dr. P. M. Cardew, Professor A. L. d'Abreu, Professor A. C. Dornhorst, Dr. J. R. Ellis, Mr. C. E. Engel, Professor C. M. Fleming, Dr. C. M. Fletcher, Dr. J. Graves, Dr. V. Graves, Dr. J. H. Hunt, Dr. R. C. Mac Keith, Professor N. Morris, Professor W. C. W. Nixon, Dr. J. J. A. Reid, Professor G. A. Smart, Dr. J. S. Stokes, Dr. G. Swift, Mr. A. Thistlethwaite, Dr. A. G. W. Whitfield, Dr. A. Herxheimer.

1. Defining the Population

Since only doctors within range of B.B.C.-2 transmitters (Crystal Palace and Sutton Coldfield at the time) who also possessed or had access to B.B.C.-2 sets were of interest, no existing list of doctors defined the required population. With the aid of transmission-area maps supplied by the B.B.C. all 22,300 doctors in the London and Birmingham areas were circulated with (a) material on the programmes, and (b) the request to return a prepaid card with their name and address printed on it should they have a B.B.C.-2 set; they would then be in a position to receive the additional information contained in a publication "Postscript" to be circulated after each programme. Cards were returned by 5,600 doctors who constituted the population from which samples were drawn. These 5,600 probably represented about 80% of all doctors owning a B.B.C.-2 set in the area; this figure was arrived at by applying the B.B.C. survey figures to the whole population.

2. "Subjective" Questionnaire

This set out to answer the following broad questions: How many doctors watched? Who were they in professional terms? What did they think of the idea of the programmes, and of the programmes as actually broadcast? Had doctor-patient relationships been affected adversely by the fact that the whole population could watch the transmission?

One week after each of the six programmes a questionnaire dealing with a variety of questions related to these topics was sent with a stamped addressed envelope to a random sample of 300 doctors from the 5,600. After a further week a reinforcement letter was sent urging non-responding doctors to return the forms. All replies received later than two weeks after this were ignored. The distribution of the questionnaires and the analysis of results were undertaken by Mr. J. Osmond and Mr. S. S. Siddall, of Smith Kline and French Laboratories Ltd.

3. "Objective" Questionnaire

This set out to answer the question: Do the doctors who watch learn and retain information from the programmes? This question quickly involved a second: Can postal techniques alone be used successfully for this type of investigation?

Papers containing 10 multiple-choice questions were prepared by Dr. John Stokes. Six of the questions in each paper related to material dealt with in the programmes, and four to control material taken mainly from the "Current Practice" section of the *British Medical Journal*. Among control questions asked were those on cerebral palsy (26 December 1964 and 2 January 1965), undiagnosed fever (9 January), convulsions in infancy (13 and 20 February 1965), and infections of the eye (26 February 1965); influenza vaccines, psoriasis, frusemide, and corticosteroids were the subject of other control questions, which were intended to cover a broad range of general medical subjects.

These questionnaires were posted three weeks after programmes I, II, and IV to 600, 600, and 200 doctors respectively. All replies received later than two weeks after this were ignored for programmes I and II. Through the courtesy of Professor G. A. Smart the results of these papers were analysed by means of the Newcastle University computer and the programme already written for the marking of the multiple-choice paper of the M.R.C.P. (London) examination.

The results of the first two programmes were studied, and in view of the response to these two questionnaires the techniques were modified for programme IV. Identification of all doctors involved was made possible by code, and three weeks after the posting of the questionnaires a personal letter was sent to all non-responders. Replies received later than two weeks after

this were ignored. The composition of the responding and non-responding groups was then studied in greater detail, with the use of information given in the *Medical Directory* 1964.

Results and Discussion

The Audience

Response to the "subjective" questionnaire began and remained high: 76% of 1,800 doctors receiving the questionnaires returned them completed in time (66–86%). There was no falling off in response rate from the first to the sixth programme. An average of 36%² of responding doctors watched the programmes (27–41%), 28% in the evening and 11% at the lunch-time repeat. Again this high percentage of viewing doctors did not fall off as the series progressed. The intention to view further programmes was also well maintained during the six-months study. These encouraging figures show that enough doctors watched the programmes to justify continuance of the series.

Table II summarizes the audience by type of practice for the first three programmes; there was no change in subsequent inquiries. Rather more than half the audience were general practitioners, but only one-third of these were in single-handed practice.

TABLE II.—Audience: Type of Doctor Viewing

Type of Doctor	Programme		
	I (%)	II (%)	III (%)
G.P. in partnership	36	28	42
G.P. single-handed	17	20	20
G.P./hospital	6	3	—
Hospital	22	32	26
Specialist/research	3	1	0
Public health	5	7	6
Other	5	0	4
Retired	2	10	2
No information	3	0	0

Contact with other doctors and other methods of continuing education through the medium of such programmes was hoped for. Twenty-one per cent of the audience watched the programme in the company of other doctors; and discussion afterwards, even if not formally organized, may be at least as important itself in transmitting ideas. A number of post-graduate medical centres featured the lunch-time repeats of the programme in their activities.

Doctors not already participating in other forms of medical continuing education were the main target audience. Table III gives information on the statements made by participating general practitioners about their use of alternative sources of continuing medical education. Only half had attended a refresher course in the preceding two years, and only one-quarter attended clinical meetings regularly. Journals appear to be more frequently used.

TABLE II.—Audience: Participation in Other Forms of Continuing Education (G.P.s Only)

Attended Refresher Course in Last 2 Years	Attended Clinical Meetings	Read Journals
Yes 53%	Regularly .. 22%	Regularly .. 66%
No 45%	Sometimes .. 49%	Sometimes .. 32%
	Rarely .. 26%	Rarely .. 1%
No information 3%	No information 3%	No information 1%

All G.P. respondents: neither refresher courses, nor clinical meetings, nor journal readers affected tendency to view.

Doctors' Opinions of the Programmes

Before open medical broadcasts to doctors are proceeded with it is important to assess the profession's attitudes towards this type of material becoming potentially available to the general

² About 2,300 per programme, from the Birmingham and London areas alone.

public. Table IV gives data on this aspect. Attitudes changed slightly in favour of the idea as the series progressed, and comments were generally favourable. Assessment of individual items was also made, again showing a high level of acceptability. Viewers were also asked to comment upon the interest, usefulness, and level of the programmes, and to compare them with a refresher course (Table V). The programmes were thought to be interesting, but their usefulness was rated less highly and most doctors preferred refresher courses.

TABLE IV.—*Opinions: Attitude Towards Open Television Broadcasting (Mean of Four Programmes)*

	Saw Programmes	Did not see Programmes
In favour	75%	68%
Not in favour .. .	8%	12%
Don't know/no reply .. .	18%	19%

TABLE V.—*Opinions: What Did the Doctors Think of the Programmes as a Whole? (Viewers Only, Mean of Six Programmes)*

Interest and Usefulness	Level of Presentation	More Useful than a Refresher Course
Interesting .. 91%	Too elementary 10%	Yes .. 20%
Uninteresting .. 6%	Too specialized .. 9.5%	No .. 42%
No information .. 3%	About right .. 79%	Don't know .. 33%
Useful .. 51%	No information .. 10%	No information .. 5%
Not very useful .. 30%		
No information .. 19%		

Effect on Lay Audiences

The total audience was estimated by the B.B.C. audience research department as averaging about 2% of B.B.C.-2 viewers over the six programmes; since the B.B.C.-2 viewers at that time numbered 1,500,000, this represents about 30,000 viewers per programme. The programme seemed to have no effect on doctor-patient relationships, in spite of this large lay audience. Very few reports from patients stated that they had mentioned the programmes to their doctors (only 29 out of 1,108 questionnaires asking for this information). Of these 29 only 14 had been worried by the programme and had gone to their doctor; nine had been relieved of worry by the programme and mentioned this to their doctors. Six patients only requested treatments discussed in the programme, and five of these were in connexion with programme VI on the early diagnosis of impaired sight and hearing in children.

Because these first programmes were publicly available, such topics as the treatment of carcinomatosis or venereal disease were avoided. It was felt that, for the future, such topics could be handled on a programme specifically for doctors, provided that the verbal and visual material was carefully chosen.

Learning: the Objective Questionary

Learning as a result of the programmes is very difficult to assess. The short 10-question multiple-choice paper proved a valid means of discriminating viewers from non-viewers three weeks after the programme.

Table VI indicates the response to multiple-choice questionnaires on programmes I and II. The response rate was low,

TABLE VI.—*Response to "Objective" Questionaries*

	Posted	Returned	Watched			Watching Overall*
			Yes	No	No Inform.	
Prog. I ..	600	220 (37%)	80 (36%)	127	13	39%
Prog. II ..	600	151 (25%)	51 (34%)	94	6	27%
Prog. IV ..	200	58 (29%)	12 (21%)	46	0	39%
After reinforcement		114 (57%)	18 (16%)	86	10	

* Derived from corresponding "subjective" questionnaire.

but Table VII shows that the mean scores by viewers on questions relating to material in the programmes was higher in both instances than the mean scores by non-viewers. In programme I the difference was highly significant, but in programme II marginally so. When the score increments over the control questions were considered (a better index of increment in information) the difference failed to reach significance at a 1:20 level in programme II. The large individual variation and low control scores after programme II make the task of detecting increment in information more difficult.

TABLE VII.—*Mean Scores of Viewers and Non-viewers on Questions Relating to Material Included in the Programmes and Control Material Not Included: Programmes I and II*

	Control Questions	T.V. Questions	Difference	P*
Programme I: Viewers (80) ..	53.4%	74.4%	21.0%	< 0.001
Non-viewers (127) ..	51.2%	59.1%	7.9%	
Programme II: Viewers (51) ..	26.7%	60.9%	34.2%	0.1 < P < 0.05
Non-viewers (89) ..	30.5%	52.8%	22.3%	

* P here refers to the difference between viewers and non-viewers on the figure (score on T.V. questions minus score on control question). If, in programme II P is calculated simply for the difference in scores on the T.V. questions alone, then P = 0.05. In neither programme is the difference between the scores of viewers and non-viewers on the control questions significant at this level.

The real problem was the low response rates to the postal approach. With the special sample involved and the highly charged nature of the questionnaire this was expected. Programme IV was used to test (1) the efficiency of reinforcement by personal letter, and (2) the composition of the responding and non-responding groups in professional terms.

The effects of the reinforcement are shown in Table VI. The response rate was raised from 29% to 57%. Table VIII shows the analysis of those who returned the questionnaire and of the group as a whole. The subgroups correspond with respect to type of work, age, higher qualifications, and publications, but there was a bias against viewers returning their questionnaires, made more evident by reinforcement. The responding viewers cannot therefore be considered typical of all those viewing within the group.

TABLE VIII.—*Analysis of Responders to Programme IV (Data Obtained from the "Medical Directory 1964")*

	Responders (114)	Whole Group (200)
Watched	16%	39%*
G.P.	43%	41%
Hospital	43%	42%
Other	8%	11%
"Higher" qualifications	45%	50%
Listed publications	23%	28%
Qualified before 1955	70%	77%

* "Higher" qualifications include diplomas as well as memberships and fellowships of the colleges.

* This figure derived from corresponding "subjective" questionnaire.

Before the survey it had been anticipated that non-viewers would be reluctant to waste time for a programme they had not seen. In fact the non-viewers responded well, and it was those who had seen the programmes who seemed reluctant to return an "examination paper," the difference becoming very marked after the posting of a personal reinforcement letter. Though the results of this initial survey to obtain objective information on learning were encouraging, no conclusion beyond the small responding group can be drawn. This group, however, does appear to have retained information from the transmissions studied.

Not only data on retention of information are required but also evidence on any change in attitudes and actual clinical practice. Television is a glamorous technique at the moment, and an effort is needed to assess its value fairly. The money available for postgraduate education is limited, and must be spent efficiently. Almost certainly television broadcasts that can be viewed by the whole medical population of the British

Isles³ and can be used again in the future will justify themselves. But the cost of good television programmes in time, personnel, and money should not be overlooked.

One gap which this study makes obvious is the absence of data on the efficiency and susceptibility of other more conventional postgraduate medical endeavours. No comparison with postgraduate courses and lectures is as yet possible. However, to consider these various sources of medical information as competing for the doctor's attention would be wrong; they should be regarded as complementary, and, if possible, employed in concert.

Summary

The results of a postal investigation into the first six programmes in the series "Medicine Today," broadcast specifically for doctors on B.B.C.-2 between January and June 1965, are discussed. These programmes were prepared by the Association for the Study of Medical Education in collaboration with the B.B.C.

Transmission was late at night, with a lunch-time repeat. One-third of the potential audience watched each programme, three-quarters of these doing so in the evening. Slightly more than half the audience were general practitioners.

The programmes were well received by the profession, and most of the items broadcast were rated highly. Intention to view did not diminish as the series progressed. A large majority of those who had seen the programmes favoured the idea of open television broadcasts to doctors. Very few adverse effects on doctor-patient relationships were noted, in spite of a considerable lay audience for the programmes.

An attempt was made by means of postal multiple-choice questionnaires to assess the retention of information by viewing

¹ "Medicine Today" is now being broadcast on B.B.C.-1, which covers virtually all the United Kingdom.

doctors. The technique showed that learning had resulted in those responding, but it was not possible, with the postal technique, to obtain a large enough representative sample of the group. It is suggested that interviews are required to obtain adequate data of this type.

(A full report of the programme and the research carried out will be published by the Association for the Study of Medical Education in the near future.)

This study was carried through with the help of many people and organizations. Financial aid was given generously by the Office of Health Economics, through the agency of Mr. G. Teeling-Smith, and by Smith Kline and French Laboratories, through Mr. N. Manley Cooper. The investigation was directed throughout by the Television Research Subcommittee of A.S.M.E. (members: Mr. C. E. Engel (chairman), Dr. J. R. Ellis, Professor C. M. Fleming, Dr. C. M. Fletcher, Drs. J. and V. Graves, Dr. R. C. Mac Keith, Mr. J. Osmond, Mr. S. S. Siddall, Professor G. A. Smart, Dr. J. F. Stokes). Thanks are particularly due to Mr. Osmond and Mr. Siddall, of the Market Research Division of Smith Kline and French Laboratories, who supervised the distribution and analysis of the subjective questionnaire; and Dr. Stokes and Professor Smart, who designed and supervised the marking of the multiple-choice question papers. Finally, thanks are due to the B.B.C., particularly the departments of Outside Broadcasts, Science and Features, and Further Education, for their co-operation.

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CONFERENCES AND MEETINGS

Diabetes in the Tropics

The first World Congress on Diabetes in the Tropics was held in Bombay from 20 to 22 January under the auspices of the Scientific Section of the Diabetic Association of India, which was founded in 1955.

A series of 325 diabetics who also had pancreatic calculi was reported by P. J. G. VARGHESE and his colleagues from Kerala in India. Together with a smaller confirmatory study in the northern part of the same State by C. B. C. Warriar, it was shown that relapsing pancreatitis occurred in young people who were often malnourished. Calcification was found in the pancreatic duct, though not in the acini, and a severe form of diabetes developed which required large amounts of insulin for its control. Ketosis was common, but atherosclerosis and microaneurysms were reported to be late in onset.

Juvenile Diabetes and Diet

Evidence was presented that the pattern of insulin-requiring, ketosis-prone diabetes

occurred in some young diabetics in India; indeed, diabetic ketosis was high on the list of causes of death reported from the King Edward Memorial Hospital in Bombay. However, more young diabetics seemed to be able to withstand ketosis and be treated by the sulphonylurea drugs than was found in Britain or the U.S.A. H. VAISHNAVA, T. A. V. SUBRAMANIAM, and N. S. DIXIT (Delhi) showed that some young insulin-dependent diabetics did not become ketotic even when insulin was withdrawn for some months. Patients in this group were thin and malnourished, and were drawn from a very low socio-economic group. They showed vitamin deficiencies and peripheral neuropathy, and it was postulated either that these patients had insufficient adipose tissue or that there was a defect in the mobilization of fat.

In a symposium on diet, with special reference to its high carbohydrate content, O. BUSH and T. MORIWAKI (Osaka, Japan)

discussed rice-tolerance tests. They showed that predominantly rice-eating people who were physically active were at an advantage over those who took a more sophisticated diet. The importance of making longitudinal studies in countries where transition of diet was occurring was emphasized. G. D. CAMPBELL (Durban, S. Africa) showed a relationship between cane-sugar consumption and the high incidence of diabetes in Indians living in Natal.

It was generally agreed that a realistic approach to dietetic management of diabetes must be followed when the education and economic status of the patient was low and the variety of food available was limited. Since obesity was not a major problem, it was thought that it might be preferable to leave the diet of diabetics in the tropics virtually unchanged, except to improve its nutritional value by supplements, and to use the sulphonylurea drugs or insulin for the control of the blood-sugar level.