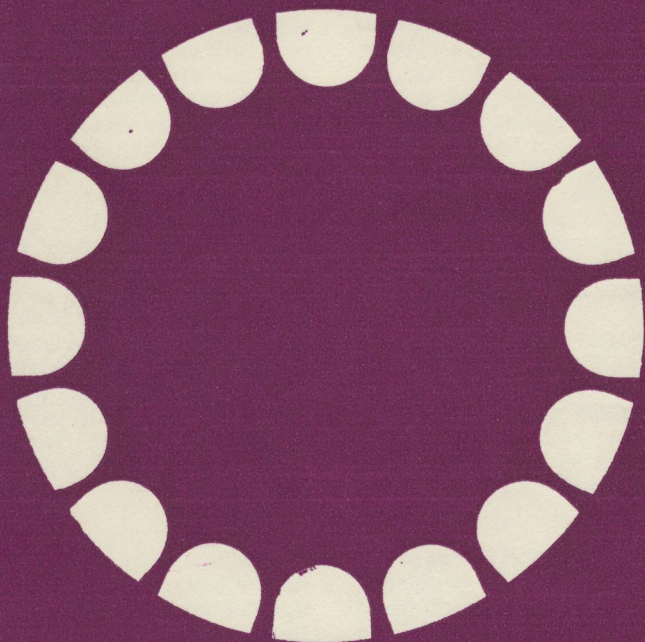


improving the dental health service

a study group

young fabian pamphlet 41 20p



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1. dental diseases and dental health

Teeth have three major functions. They bite and chew our food, they are necessary for normal speech and, as a person's appearance is radically influenced by his teeth, they have a cosmetic function. To keep teeth throughout life in a state which allows them to fulfil these roles, they need to be kept constantly healthy and the gums and bones in which they are embedded must also be kept in good condition.

The teeth, like the body, are subjected to constant assault. The skin when cut succumbs briefly to germ attack and then normally repairs itself. In contrast, if a tooth's defences are broken through, the tooth has very little capacity to heal. The germ attack will continue unabated until the tooth has to be extracted (usually as a result of pain) unless man interferes, assists the tooth to recover and replaces the damaged parts.

Among children and young adults the major cause of tooth loss is destruction of tooth substance—that is, decay (dental caries). Decay is most prevalent in the eleven to seventeen year age group, while adults aged twenty to forty have little new decay. Among adults there is an increased tendency for teeth to be lost because of disease of the tooth supporting tissues—gums and bones—that is, periodontal disease. These are the main causes of tooth loss.

Dental disease is largely a disease of modern man. Primitive man ate unrefined mainly fibrous foods—vegetables and meats. Sugar was unknown to him except in fruits. His life expectation was short and his teeth lasted him in good health for life.

Several factors now encourage tooth damage and loss. That people who eat sweets get decay has long been recognised, likewise “dirty teeth go bad”. So cleaning teeth and avoiding sweet foods both make life hard for the germs and good for teeth. Having fluoride in the diet while the teeth are forming (as a child) make the teeth stronger and resistant to decay. There are therefore three cheap and simple measures which can reduce

dental disease. These are good oral hygiene, reduction in sugar consumption and water fluoridation.

If these three measures do not completely prevent the teeth from decaying, then regular visits to a dentist ensure that the damage done when germs break through is repaired as simply and painlessly as possible, long before the tooth is badly damaged. If these visits are maintained over a lifetime and the care is of the highest quality most people could keep their teeth throughout their lives. Such dental care promises improved old age, with better general health—the fully toothed senior citizen can chew his food properly; good appearance is maintained—facial contours are supported by teeth; there is no speech deterioration—no hissing through collapsed lips, and of course personality and liveliness are correspondingly enhanced. Western man, who is now in a position to have regard for the quality of life and not just survival, is increasingly concerned that his teeth should accompany him through that life and help preserve his dignity in old age.

The measures for prevention outlined above are cheap and if instituted then the type of care needed would be substantially altered, the result being that time and money could be used to far better effect. Toothache would be a thing of the past and national good dental health would be a reality.

Today, in Britain, over a third of the population have no teeth at all. That is to say they are edentulous. They have to use plastic contraptions to attempt to perform the functions of the teeth they have lost—or use nothing. Dental health is impaired long before all the teeth are lost, so that the edentulous third of the population is just the tip of the iceberg. The state of the nations teeth is at present a disgrace. In this pamphlet we attempt to describe the present dental status of the nation and to suggest steps which should be taken now to secure a vast improvement.

2. the present position

Little concern was shown in dental health before the end of the nineteenth century. Interest was sparked off during recruitment for the Boer war when it was discovered that many young men were unfit for service because the poor state of their teeth meant that they would have been unable to "bite through the cordite" and hence would have found difficulty in firing the guns. The realisation of this situation increased pressure which resulted in the formation of the school dental service in 1907. This innovation made a number of improvements but it was only on a small scale and the best treatment was given to those who it was felt would benefit. Hence in 1939 a document was produced which suggested that teeth should be filled if the patient had not neglected oral hygiene (*The Health of the School Child*, 1939, reported in Gray, Todd, Slack and Bulman, *Adult Dental Health in England and Wales in 1968*). For the working population treatment was only available privately and this largely consisted of the relief of pain by extraction and latterly, for the better off, the provision of dentures.

In 1948 the introduction of the National Health Service considerably altered the picture and treatment became free. Furthermore when the patient registered with a dentist the aim became that he should be made "reasonably fit dentally" and this radically changed dental practice. There was a massive increase in demand for dental treatment—much bigger than anyone had anticipated—and considerable improvements in dental health have followed. For example the proportion of edentulous persons under the age of thirty has fallen from about 11 per cent thirty years ago to under 5 per cent now. This is not however due to a continuous over-

all improvement for some areas have had periods even in comparatively recent times when their dental health has deteriorated. For example J. W. Craig reported that in Scotland there was a worsening of the position between 1955 and 1964 as measured by the DMF (decayed, missed and filled) index for fourteen year olds (*British Medical Journal*, February 1970). Thus it can be seen that there is no room for complacency and improvements will have to be worked for.

This DMF index is the most commonly used measure of dental health. A second measure, cruder but much simpler, is the proportion of the population that is edentulous. While it has its drawbacks it is easily calculable and hence there is greater availability of information.

The proportion of the population edentulous relates to four basic variables; age, sex, social class and geographical area. In the 16-24 age group in 1968, the proportion edentulous in England and Wales was 1 per cent and this proportion rises as there is movement up the age ranges. The change is small at first and in the 25-34 age group the proportion edentulous was 6.8 per cent but in the 35-44 group the proportion had tripled to 22 per cent. In the age group 55-64 nearly two thirds of the population were edentulous and among the over seventy fives the proportion edentulous was four fifths (Gray, Todd, Slack and Bulman, *Adult Dental Health in England and Wales in 1968*). One of the reasons for such high figures among the higher age groups is the difference in mortality rates between men and women. Men on the whole have a shorter lifespan than women, and women are more likely to lose their teeth at an early age. Among some groups the differences in

PERCENTAGE EDENTULOUS IN ENGLAND AND WALES

professional	social class 1	15.2	} 27.1
managerial	social class 2	31.0	
skilled—non manual	social class 3	25.1	
skilled manual	social class 3	33.9	} 46.4
semi skilled	social class 4	47.0	
and unskilled	non manual	45.8	
	social class 4		
	manual		
	social class 5	47.1	

PERCENTAGE EDENTULOUS

age group	the north	Wales and the south west	Midlands and east Anglia	London and south east	all
16-24	2.4	0.0	1.1	0.0	1.0
25-34	15.4	6.9	4.4	2.1	6.8
35-44	32.1	26.0	20.3	13.1	22.0
45-54	55.4	33.3	47.6	27.2	40.6
55-64	73.3	73.7	55.2	54.7	63.6
65-74	80.7	88.5	82.3	69.4	78.7
75+	93.5	87.5	88.9	83.6	88.1
all	45.5	43.2	33.9	28.4	36.8

source : Gray, Todd, Slack and Bulman, *Adult Dental Health in England and Wales in 1968*.

loss of teeth between the sexes is quite marked, for example in 1968 in the 35-44 age group 28.8 per cent of women were edentulous compared to only 16.3 per cent of men.

The third variable is social class as the following table shows. The higher social classes have a smaller proportion of edentulous persons.

It can be seen from the table that manual workers in social classes 4 and 5 are three times as likely to be edentulous as professional workers. However this difference is not simply a working class/middle class dichotomy for there are also marked differences within the middle class groups with managerial workers having twice the proportion edentulous as professional workers. Although there are always class differences in health indices, in this case they are more marked than might have been predicted.

Fourthly geographic variations exist. The table above shows differences between four areas of the country.

It can be seen that in the age group 25-34 there are seven times as many edentulous persons in the north as there are in London and the South East and three times as many as there are in the Midlands and East Anglia. Another comparison which shows up the magnitude of the variations is that whilst in the North among the 34-44 age group a person in the lowest of three social class groupings is very likely to be edentulous (66 per cent have lost all their teeth), in London a person in this age group in the highest social

class grouping is very unlikely to be edentulous (only 16 per cent fall into this group). This kind of variation between areas led Gray and his associates to argue that if regional differences could be eliminated tooth loss in the next twenty years could be halved.

Apart from the differences in class structure between the North and the South which may produce different cultural attitudes towards dentistry (there is some evidence that people in the North clean their teeth less often) the proportion of dentists may be an important factor. In 1967 there were wide variations between the regions in the availability of dental personnel; the table below shows the average number of people per dentist (working in general dental practice).

POPULATION PER DENTIST

the north (including the north east)	5,750
Wales and the south west	6,070
Midlands and east Anglia	4,840
London and the south east	3,290

The figures show that London has by far the highest proportion of dentists and if these figures are further broken down they show that there are over 6,000 people per dentist not only in Wales but also in the West Midlands, East Midlands and the North. The maldistribution of dentists has actually worsened since the formation of the National Health Service. The proportion per dentist ratio in Wales increased by 50 per cent between 1949 and 1965, while in London and the South East it was reduced by 15 per cent. Overall the number of dentists has not kept pace with the population increase although the

pressure has been lessened somewhat by increased dental productivity. More recent figures (supplied by the BDA) which apply up to September 1972 and give a breakdown into counties and sometimes to towns show that there are wide variations even within deprived areas. For example the Welsh figures show that Caernarvonshire has one dentist per 4,712 people whereas Breconshire has only one dentist per 8,734 people. This latter figure is four times as high as the number of people per dentist in Inner London and over three times as high as the comparable figure for Middlesex. Thus if equal availability of treatment is one of the principles of the National Health Service, it is clear that much work is still needed to achieve this aim.

international comparisons

Britain is well down the list in dentist/population ratio when compared to other developed countries. The 1968 figures reveal that Norway has the highest proportion of dentists with 1,240 people per practitioner. This compares with just over 2,000 in the United States, 2,500 in France, 3,800 in Britain and nearly four thousand in Holland (*Social Trends*, HMSO, 1971).

The wide variation between countries may be due to several reasons including (1) the prevalence of dental caries, (2) the proportion of the populations undertaking regular dental treatment are

different, (3) that some countries may provide superior treatment or (4) that dental productivity varies considerably.

Figures for dental health which are comparable are generally difficult to obtain but some do exist. The results of various surveys into the percentage of the population edentulous have been combined into the table below.

PERCENTAGE OF POPULATION EDENTULOUS BY COUNTRY

year	country	% eden- tulous	age group
1968	USA	18	18-79
1951-54	Denmark	23	15+
1963	Sweden	24	16+
1968	England and Wales	37	16+
1968	New Zealand	65	20+

sources : USA and British figures, Gray *et al* (*op cit*) ; Swedish figures, Smedby, *Tandvaardsforsakring Sou*, 1965 ; Danish figures, *Committee on the Danish National Morbidity Survey*, Munkegaard Copenhagen, 1960 ; New Zealand figures, *New Zealand Dental Journal*, October 1969.

The position of the United States is much better than the others especially when one considers that by taking the age group 18-79, the 16-18 group with a low proportion edentulous is excluded. The New Zealand figure also suffers due to the age group monitored, but the poor performance is not immediately clear as there

PERCENTAGE EDENTULOUS BY AGE & COUNTRY

		USA	England & Wales	London & the SE
25-34	male	2.7	5.9	3.3
	female	6.1	7.6	1.0
35-44	male	5.9	16.3	11.6
	female	10.1	28.0	14.6
45-54	male	20.0	36.1	22.2
	female	20.1	44.2	30.7
55-64	male	34.7	61.1	52.9
	female	38.0	66.1	56.9
65-74	male	45.1	77.6	66.0
	female	53.0	79.6	71.9
all ages	male	16.5	32.9	26.7
	female	19.7	40.2	29.9
	all	18.1	36.8	28.4

source : Gray, Todd, Slack and Bulman, *op cit*.

has been a school dental service in New Zealand since 1923. However, the lack of a comprehensive service for adults must be seen as a contributory factor. One other important point from the table is the remarkable performance of Denmark when it is realised that these figures were gathered fifteen years before those for England and Wales. Had later statistics been available, they might place her ahead of the United States. Although the poor British performance is largely due to the inadequate facilities in the days before the National Health Service, a deeper comparison with the United States reveals that even in recent years the American performance has not been matched (see table on page 4).

These figures show that overall the proportion edentulous in the United States is only half of that of Britain. The difference is less marked in the younger age group but the only time the British population has a more favourable position is within the 25-34 age group in London and the South East. The widest differences are within the 55-64 age group when 64 per cent are edentulous in Britain compared to only 36 per cent in the United States. A number of explanations for these differences can be suggested. The most obvious one is that the United States being a richer country has greater available dental resources and hence is able to provide superior treatment. However, while this explanation is attractive, it must be subject to a number of reservations as it does not apply in other areas of health care. For example the United States has a greater number of doctors per head of population; 650 people per doctor compared with 820 in Britain (*Social Trends*, HMSO, 1973). It also has more nurses and much technical equipment and yet it does not fare very well in health indicators. For example average life expectancy is only 70.3 years (71.8 in Britain) and its infant mortality rates in 1971 were 19.2 (17.9 in Britain) (*Social Trends*, HMSO, 1973). So while the availability of dentists in some areas may be a partial explanation there may well be other important factors. One is that much of the present edentulousness in Britain is the result of past neglect. As

late at 1968, 45 per cent of edentulous people had lost all their teeth before the formation of the health service. Another reason for the difference is that there might be less decay in the United States overall both because a higher proportion of the population received fluoridated water and also because there is a higher proportion of blacks who have better than average teeth. A final reason may be related to the fact that regular advertising of toothpaste has made the general population more aware of dental health.

Overall the evidence of this chapter shows that despite the National Health Service, Britain's dental health fares poorly besides other Western nations.

3. dental health education

Dental Health Education has been defined as "the provision of dental health information to a total population in such a way that people will apply it in everyday living" (Young and Striffler, 1969). To fulfil this objective is a mammoth task. The message to be put across is the desirability of a good dentition which can be maintained throughout life by the efforts of the individual. This includes information on the maintenance of good oral hygiene, dietary counselling, the availability and importance of regular dental care, the preventability of dental disease and the scope of possible treatment. The efficacy and desirability of water fluoridation and other methods available for incorporating fluorides within the tooth structure are of equal importance. This information is presented in various ways depending on the group towards which it is directed.

The onus of dental health education is undertaken by three different groups. Firstly by Government—Central Government acting through the Health Education Council and area health authorities via their dental services which provide posters, leaflets, oral hygiene kits, and speakers to various groups such as schoolchildren, mother's clubs and teacher training colleges.

Secondly by the Dental Profession. The British Dental Association and the General Dental Council in liaison with such bodies as the Milk Marketing Board and Apple and Pear Publicity Council provide a wide range of posters and leaflets on dental health education. In this category dentists themselves are responsible for a great deal of dental health education both on an individual basis to patients attending for treatment, and by speaking to groups of various sections of the community such as school children, young adults in colleges, clubs and societies. They also make use of the mass media such as broadcasting and articles in the press and journals. Dentists in various branches of the profession such as those in hospitals, the armed forces, the public dental services and private practice are involved to a greater or lesser extent in dental health education, but it

is regrettable that under the National Health Service a dentist in general practice receives such a trifling fee for educating his patients in oral hygiene that it discourages him from doing so. This is one field where the fullest use can be made of dental ancillary manpower, as non-dentists can be trained to give dental health education very effectively, thus releasing dentists for the highly skilled work they are trained to do.

Thirdly—commerce plays a large part in Dental Health Education. The major toothpaste and toothbrush manufacturers by advertising in the mass media, put over a simple and important message—that a healthy mouth is attractive and socially desirable. These companies also have excellent public relations facilities and are invaluable in providing dentists with posters, films, slides, leaflets and samples for use in dental health education. The British Dental Health Foundation coordinates some commercial interests. It is a dismaying fact, however, that in spite of all these efforts, the majority of the public are blissfully unaware of the importance of dental health, or are not motivated to put this knowledge to use in their everyday lives. That dental disease is never fatal could be the cause of this. Repeated questionnaires have shown the ignorance of many people on dental health and statistics show the lack of concern which prevails in Great Britain at the present time. When only one third of the population seeks regular dental care, when the average person buys a new toothbrush less than once a year, and uses only 4.2 tubes of toothpaste per year, it can be seen that much of the dental health education in this country must be falling upon stony ground.

The potential governmental role as a lobbyist in this field should perhaps be considered further. H.M. Government warnings on cigarette packets serve as a reminder that their content is recognised as being of negative health value. A specific tax on sweets, imposed as a deterrent rather than as a revenue raiser, could similarly help propagate the view that sweet substances have negative ill effects.

4. the case for restructuring payments to dentists

In considering how to improve the nation's Dental Health one of the crucial questions is whether the skills of the dental profession are being used most efficiently and whether dentists are being encouraged to carry out the form of practice most useful to the community—that is, the use of preventative measures and regular care. The main factor governing dentists' motivation and work patterns is their method of remuneration and thus it is worth considering whether the present system can be improved.

The existing scheme of payments for dentists is as follows. The Government considers the advice of its review body and decides what net income from the National Health Service the "average dentist" should annually receive. With this information the Dental Rates Study Group appointed jointly by the Government and the profession then devises a scale of fees which tries to ensure that the "average dentist" working for a stated number of hours should earn the prescribed net annual income. Each year the Dental Rates Study Group sets out a target gross income and if dentists exceed the estimated amount of work then it is possible that the actual net income will be higher than the target. In recent years the relationship between target and actual gross income has been as follows :

TARGET AND GROSS INCOME

	target gross income (£)	actual gross income (£)
1971-72	10,146	10,205
1972-73	11,000	10,841
1973-74	11,673	11,694

This table shows a fairly close relationship between the target and actual gross income but, in practice, the continuing increases in laboratory and other costs has each year reduced the real net income received by dentists below that suggested by the gross figures (unpublished figures).

Each dentist is paid according to the number of dental jobs he does and these are evaluated according to the scale of fees. This means that the dentist can greatly increase his income by working faster and by working longer hours. In fact the

individual dentist is in the position where he can affect his own income but not those of his colleagues and is therefore under pressure to increase his productivity if he wishes to increase his take-home pay. This system has some advantage in that it encourages continuing increases in productivity and has ensured that a high volume of dental work is completed. However it has many disadvantages which it is possible to itemise.

The first is that the present system presents a financial disincentive to persuade the patient to change his dental habits. Any time spent on useful oral hygiene instruction such as teaching the best methods of teeth cleaning is unpaid and is time lost from remunerative treatment (such as fillings and extractions).

Secondly, as there has been continuously an excess demand for dental care there has been little or no incentive for a practitioner to go to an area where there are few dentists. If, as with general medical practitioners, a capitation system existed, this might encourage dentists to move to areas with low dentist/population ratio. At present it seems that the demand for treatment expands to keep pace with the supply of dentists but evidence indicates that the proportion of regular patients who visit dentists remains a fairly constant proportion of any dentist's work despite the overall variations of care available. It therefore seems likely that any future increased availability of dentists will enable people in deprived areas to avail themselves of increased treatment if more dentists are encouraged to move to these areas.

Thirdly, the present system enables young, newly qualified practitioners to earn disproportionately high incomes. Unlike the situation for other professions the system of payments does not give significant reward for experience. Consequently older practitioners face diminishing incomes.

Fourthly, a fixed itemised scale puts a premium on speed and does not take quality into account. There is thus no incentive to achieve high standards of work and thus there is a greater

emphasis on turnover. In 1964 a sub-committee of the General Dental Services Committee of the British Dental Association charged that "Since quantity is the main criterion, the less scrupulous are tempted to indulge in over-prescription and other dubious practices". If it were true that in the early sixties there was an over concern with financial matters among dentists then there is little doubt that the changes towards increased commercialisation with the 1971 charges has accentuated this trend.

The final point is that since payments depend on output the dentist loses money if he takes a holiday, is ill or if he takes on a patient who because of age, medical condition or other factors is difficult to treat.

In recent years the dentist has been able to make most money by doing simple fillings. Any work involving expensive materials (such as gold) and/or laboratory fees often results in little or no net income. Thus this system of payment discourages the dentist from carrying out the more elaborate work which is worthwhile for the patient and which helps the dentist to develop his skills. In times of rapid inflation this kind of problem is exacerbated. At the beginning of the financial year, just after dentists have received a higher scale of fees, there will be profit from more expensive treatment requiring a high proportion of laboratory work. However as the year passes the cost of laboratory work will increase whilst the fee payable will remain constant. At present no inflation proofing is worked into the system.

Many suggestions have been made as to how the general dental services should be reorganised and improved. However at present there is only long term experience of one alternative, and experimentation with one other, from which to learn. About one tenth of dentists work in salaried positions—in the armed forces, schools dental services, industrial clinics, hospitals and health centres. The main advantage of a salaried service is that it allows more time for treating priority groups who present special difficulties,

such as young children and the handicapped. The disadvantages are that productivity of such personnel is low (unless a complex form of scrutiny exists), equipment and premises costs tend to be high, there is rapid staff turnover and many dentists feel that their independence is too severely limited.

The other alternative, which is at present under trial and consideration (in Scotland), is a form of direct remuneration of expenses and net fees paid scheme. In this scheme, all the outgoings of practice—staff, materials, rent, rates, laboratory costs are directly remunerated by the administration; the practitioner is paid net fees or a basic retainer plus bonus payments for productivity. The advantages of this are that it insulates the dentist from the effects of inflation, it helps the administration to direct dental services to particular areas and it retains incentives for high productivity. The disadvantages are that it is administratively cumbersome, it is expensive (dentists are less economical when someone else pays their bills), it is generally unacceptable to dentists because of the many constraints and directives which are involved (which in themselves may be attractive to Government) and which must be "bought off" with higher fees. Above all, though, it retains all the faults of a repair orientated service and there is no restructuring towards a preventative approach.

The difficulties of the present system of remuneration have been recognised for some time. In 1964 a committee, appointed by the British Dental Association, under the chairmanship of W. R. Tattersall, discussed alternative methods of payment and proposed a scheme of payment which would overcome many of the difficulties outlined. In their report they suggested that dental care can be divided into two main kinds—initial care and maintenance care. They suggested that once initial care has been attained routine maintenance care continues at a fairly even and predictable level. This, they argued, allows for *per capita* payment. Their proposed scheme suggested that dental remuneration should be based on a basic payment for the maintenance of

dental fitness and an additional payment for complex treatment and dentures, together with payment similar to the present system for initial work required to establish reasonable dental fitness. More specially they proposed that all persons over the age of three years and not edentulous would be eligible to participate in the capitation scheme. Each person would be able to obtain a certificate of dental fitness which would be valid for two years. The dental practitioner could then claim a capitation fee for all his patients with such certificates and would be able to do so annually whilst the certificates remained valid. When the patient returned within the period of validity the dentist would perform any necessary further treatment and then issue another two year certificate. However if the patient failed to return regularly within the appointed period his name would be removed from the capitation list and he would have to have his mouth put into good order at his own expense before regaining eligibility of treatment under the capitation scheme. This would encourage people to attend for regular treatment in order to retain eligibility. A similar scheme is being tried out in Holland.

The capitation fee would cover all routine treatment. Patients' payments for this treatment would cease except for patients outside the scheme. However there might be some exceptions made for more expensive treatment such as post crowns and root treatment.

The report claimed a number of advantages to this system. In the first place it recognised the true role of the dental surgeon in maintaining a healthy mouth.

Secondly, the system would allow the dentist to spend more time on preventive work. He would profit more from a healthy mouth than from reparative care, thus altering the present emphasis. Furthermore it would reduce the present wide variation of dentists' incomes and would reward the ability to prevent and control dental disease rather than the ability to work fast at piece rates. Finally it would bring in a strong element of patient responsibility and produce a financial en-

couragement to enlist for regular treatment.

This report has never been acted upon and as mentioned earlier the only major change has been the introduction of dearer dentistry for the patient. In our view this scheme, had it been introduced, would have been a great improvement although there is no doubt that it did have a number of weaknesses. In the first place it did not take into account the fact that dental treatment is needed more by certain groups than others. The capitation fee would have to be varied according to the likely and particular treatment needs of special groups (for example children and the handicapped). Secondly, in causing backsliders to have a financial penalty, it might act as a disincentive to those who for a variety of reasons have neglected their mouths (however the cost of attaining a fit mouth should be no more than it is today). The third point, which was of concern at the time the report was produced and which is still relevant today, is whether the dental service could cope with the increased demand which might result from such a scheme. It is believed however, that demand would only slowly increase as many people (about 65 per cent of the population) would initially have to be encouraged to regularly attend a dentist for the first time ever. These people would be slow to come and thus the extra initial care required would be staggered over many years. Fourthly, it is questioned whether dentists would accept such a scheme as it would overtly limit their income. Certainly the fees would have to be calculated to equal or slightly improve the present remuneration of the vast majority of dentists. If this were achieved, the scheme, if properly explained, should find acceptance. Fifthly, there is no mention in the scheme of laboratory costs and rents. Any scheme of payment should deal with such problems that might arise. Finally, the report does not deal adequately with the relationship between the Schools Dental Service and other dentists and so does not give such a complete picture as required.

Despite these criticisms, however, the general principles behind the report are

quite sound and have helped us greatly in our analysis of the present situation.

Overall the changes we would like to see are as follows:

1. There should be a gradual introduction of a capitation fee. Dentists should be paid according to the number of patients who become dentally fit and remain so. This will encourage dentists to take on new patients and will discourage any tendency towards shoddy or surplus treatment because there will be a financial disincentive.
2. The capitation fee should be varied according to the age group of the patient or in relation to special treatment demands.
3. The system should be adapted so as to take account of experience. This would tend to allow the older dentists to get a better income at the expense of the younger ones and would probably meet with the approval of most practitioners. It should be recognised however, that there are some dangers in this policy in that if the British incomes for young dentists fell much below that of other countries there might be a tendency towards temporary emigration.
4. A capitation fee will help towards a more equitable distribution of dentists but further methods could also be used if this was not found adequate. For example there could be incentives to move into the undermanned areas by giving grants for equipment, premises at low rent and sponsoring students.
5. The problem of laboratory costs increasing between successive pay agreements can be solved by one of several methods. One idea is that all dealings with the laboratories could be arranged and/or paid for by the central administration. Alternatively there could be some methods of inflation proofing the costs either linking fees for work including laboratory costs to an index of laboratory costs, or alternatively splitting the fees into clinical and laboratory costs and indexing just the laboratory part alone.

6. The system of payment by the patient should not be such as to discourage treatment. Ideally the present system of the patient paying half of the costs should be scrapped and regular dental treatment should be free and financed from tax revenue. Purely cosmetic treatment could be charged for separately.

7. Greater utilisation of dental ancillary staff should be encouraged thus extending dental manpower at relatively low cost.

8. Any reorganisation should also aim to eliminate as much of the time-consuming form filling and dealings with bureaucracy as possible. This at present is a major source of discontent within the profession.

We believe that most of the changes we are proposing would meet with the approval of the vast majority of dentists. Careful discussions and promotion would ensure maximum support.

5. fluoridation

Without doubt, the most important and effective action which can be taken to improve the nation's dental health is to fluoridate the public water supply, that is to add a suitable amount of fluoride to the water.

The reasons for advocating this are firstly that the measure is safe; secondly it is very economical, costing only 5p per person per annum; thirdly the measure is preventative; it prevents decay rather than trying to repair its ravages. It thus eliminates much of the complex treatment at present carried out and much of the pain and misery of "bad teeth"; fourthly, but most important, it requires no action on the part of the populace. Thus those who need the most help (the young, the unaware and the uncaring) are automatically helped.

It may be thought that the fluoride could be administered by other methods, for example through tablets, school water supply, in milk, in toothpaste, mouth rinses or in solutions applied by dentists. However, none of these methods are as effective, universal and cheap as public water fluoridation. A little thought (and many studies) reveal that not one of these alternative methods affect the entire desired population as they are usually taken up by the middle classes and the aware who by definition are those not in most need. Further, most of these methods require individual active participation which necessarily means a considerably less than perfect administration with consequently poorer result. The topical fluoride methods (such as rinses and toothpaste) have a lesser protective effect than those methods involving consump-

tion and incorporation of fluoride in the developing teeth. A final point is that these methods even if conscientiously carried out are expensive in terms of numbers of teeth protected per unit cost as the table in column one shows.

Some may argue that in the long term good personal oral hygiene (toothbrushing) is more important than fluoridation in that it prevents periodontal disease (the major cause of tooth loss in adults) but this requires individual effort and thus depends for national success on a considerable increase in public interest and dental motivation. However in the long term, personal dental awareness must come, as it has in the United States and parts of Europe.

As long ago as 1908, it was noticed that persons living in areas where the public water supply had at least 1.0 ppm (parts per million) fluoride content show a considerably lower incidence of dental caries than that found in persons living in low fluoride areas (H. J. Dean, *American Association for Administration of Science*, 1942). Numerous further studies carried out throughout the world have confirmed that correct fluoridation of water can reduce the amount of caries by up to 60 per cent and that a continued intake of fluoridated water throughout life shows benefit for the adult population. The massive reduction in caries would radically change the pattern of dental disease and allow our present "dental repairmen" to concentrate on treating disorders such as malocclusions (irregularly positioned teeth) and also on improving individual dental hygiene to prevent periodontal disease.

The effect of fluoride has been shown to be predominantly that of affecting tooth enamel formation, reducing its solubility in the acid formed from carbohydrate by the bacteria in the mouth. It is therefore fluoride intake during tooth formation (in childhood) which is most important. This benefit continues long into adult life. Evidence is being produced by some workers to suggest that topical antibacterial and anti-enzymic properties of fluoride are beneficial throughout life,

COMPARATIVE RESULTS PER \$100,000 SPENT

	cavities prevented
water fluoridation	666,660
self-applied fluorides	233,330
topical fluorides	60,000
fluoride dentifrices	25,600
	cavities restored
dental restorations	16,666

source : G. H. Gish, *American Dental Association Newsletter*, 1968.

even if flouride was not ingested in childhood.

The protective effect of flouride is proportional to its concentration in water supply and water intake, reaching a near maximal effect at a concentration of 1.0 ppm in temperate regions, and 0.6 ppm for tropical and sub-tropical areas. At such levels no adverse effects have been noted with the exception of inconspicuous mottling of tooth enamel in a small proportion of persons.

It should be noted that fluoride intake from all sources, measured in milligrams per day, is the important measure—not the concentration in ppm in water (which is the usually quoted criterion). However, although fluoride is present in most foods, the amounts are so minute that they can be disregarded except for fish skin and bones (especially tinned fish in which the bones are edible), but fish intake is rarely large enough to be a significant contributor of fluoride intake. Tea also has a significant fluoride content, adding approximately 1 ppm of fluoride to infusions. Tea made with fluoridated water would have a content of 2 ppm fluoride. Thus total fluoride intake depends on the concentration of fluoride in water supplies and the amount of tea drunk. However, most children do not drink much tea, certainly not below the age of eight (which is the important age group for dental effects) and therefore for children the effect of tea consumption can be ignored.

It has also been suggested that persons living in areas receiving naturally very highly fluoridated water (for example the 8.0 ppm area of Bartlett (Texas) or persons drinking considerable amounts (such as furnace room workers) might be in danger from excess fluoride intake. Investigations in such situations has shown no clinically significant physiological or functional effects resulting from prolonged intake of water containing excessive amounts of fluoride (with the exception of mottling), nor from ingestion of large quantities of tea. Similar intakes of fluoride can be assumed for those people who drink large quantities of water.

Despite the fact that the advantages of fluoridation of the water supplies have been known for many years, and despite the fact that it is cheap to provide and will save the dentist much time, the proportion of British children receiving fluoridated water is still under 5 per cent.

There are, however a number of possible reasons for its slow implementation. One point is that the main beneficiaries of the measure would be children, hence the people who make the decisions would hardly benefit themselves; also as it would be ten years or more before the effects would be fully seen, there would be no immediate political dividend. It is this aspect which is possibly the main reason why no political party has given sufficient priority to the fluoridation issue. A further point is that many vociferous anti-fluoridation groups have been effective in opposing fluoridation. Rarely do these groups use logic or fact, depending instead on emotion, prejudice and ignorance, but they are skilful and tenacious in their argument. Fluoridation has long been approved of and promoted as a public health measure by all major British political parties, medical and dental professional organisations and international authorities such as WHO but it is the dental profession who must carry most of the blame for the bungling of the promotion and the failure to institute public water fluoridation in Britain. One of the criticisms the opponents of water fluoridation raise is that of the supposed limitation of freedom of the individual that the measure incurs. They raise the spectre of a totalitarian state with the individual being ignored. However this argument is hardly realistic because it is possible to fix a filter device on the water supply of each home to ensure that no fluoride enters. If the Government were to introduce fluoridation it could provide this device free and it is doubtful whether more than a few thousand people would request it. In fact in the East End survey by Burt only 34 per cent of the population of Tower Hamlets knew or guessed that their water was not fluoridated and he predicted very little political opposition if fluoridation was introduced (Unpublished thesis, B. A. Burt, "Study of

6. conclusions

In examining the state of Britain's teeth it becomes obvious that the general condition is very poor in comparison with that of other developed countries, particularly as the National Health General Dental Service has been in operation for more than twenty five years. There are also remarkable regional and social class variations in dental health. It is perhaps surprising that progress towards positive Dental Health on a national scale has been so slow, given the amount of dental work that has been done. The reason may be that all Governments have not given adequate money or thought to its problems, the progress that has come having been on the coat tails of the medical profession. However, a more important reason is that the approach of the service has been to repair the results of the disease rather than, we believe more economically, efficiently and pleasantly, to prevent dental disease. Furthermore, interested parties have failed to "sell" dental health as a part of a wider health concern. Treatment in a health centre should not be purely for administrative convenience but also to help promote cross-referrals and the idea that mouth and general health are linked to an important degree.

Our basic summary of recommendations for improving the state of the nation's teeth are laid out below but we wish to emphasize that to achieve a real and worthwhile improvement they need to be implemented as a comprehensive package. They are complementary to each other. To implement one without the other will without doubt show little long term improvement.

recommendations

1. Education of the public towards a greater concern for dental health and knowledge of the simple methods available for preventing dental diseases. At present the vast majority of people have an ignorant, apathetic and complacent attitude.
2. Fluoridation of all public water supplies in the country. This would reduce

the incidence of decay considerably within a few years.

3. Greater recruitment of potential dental surgeons and increased utilisation of ancillary dental personnel. This would help to alleviate national and regional shortages.

4. An alteration of dentists' remuneration to a capitation system to encourage more preventative dentistry, higher quality restorative work and greater utilisation of the services by patients.

Overall these changes, which we believe are realistic, practical and acceptable to all concerned, will, if implemented, do much towards removing many of the unnecessary pressures on the dental profession and considerably improve the dental health of the nation.

young fabian group

the authors

The Young Fabian Group exists to give socialists not over 30 years of age an opportunity to carry out research, discussion and propaganda. It aims to help its members publish the results of their research, and so make a more effective contribution to the work of the Labour movement. It therefore welcomes all those who have a thoughtful and radical approach to political matters.

The group is autonomous, electing its own committee. It co-operates closely with the Fabian Society which gives financial and clerical help. But the group is responsible for its own policy and activity, subject to the constitutional rule that it can have no declared political policy beyond that implied by its commitment to democratic socialism.

The group publishes pamphlets written by its members, arranges fortnightly meetings in London, and holds day and weekend schools.

Enquiries about membership should be sent to the Secretary, Young Fabian Group, 11 Dartmouth Street, London, SW1H 9BN; telephone 01-930 3077.

The Young Fabian group studying the dental services consisted of four members. Fionuala Baker, who is 26, studied dentistry at Dublin Dental Hospital. She has worked in hospital dentistry and in General Practice both in a small coastal town and (at present) in central London.

Keith Baker, who is 27, studied at King's College Hospital, London. He has worked in the hospital and schools dental services. He is at present studying medicine at St. Mary's Hospital, London. He is a Westminster City Councillor.

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