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ORGANISATIONAL STRUCTURE
FOR THE FIJI DENTAL SERVICE
(A RECOMMENDATION)

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D.S.D. (FIJI)

A thesis submitted in partial requirement for the
DIPLOMA IN PUBLIC HEALTH DENTISTRY

Department of Preventive Dentistry
Faculty of Dentistry
University of Sydney

1992
TO

THE MINISTRY OF HEALTH

GOVERNMENT OF THE REPUBLIC OF FIJI
SUMMARY

Organisation will always be a part of our life. The aim of this thesis is to develop an autonomous organisational structure for the Fiji Dental Service.

A review is made of the development of dental services in Fiji effected by the increase in dental manpower, strength and facilities provided, and its shortfalls that are evident from the existing organisational structure.

Definitions of terms as used in the text are highlighted. Factors determining the pattern of organisation of dental health services by their action on the dental profession and the community are outlined.

In providing an organisational administration for the dental public health service, certain principles have to be followed to achieve the maximum effectiveness of the set-up. Planning and evaluation should be incorporated into the system to determine the success of the dental public health programmes.

Emphasis is laid on the training needs in dental public health and other dental specialties, with continued education a necessity to keep abreast with the developments of dentistry in the modern age. Provision of research should be the ultimate goal to achieve an effective and efficient public health service.

In the development of public dental health services it should be noted that dental public health problems are essentially similar in nature in both industrialised and developing countries. Development of preventive programmes should be considered as our first priority; a priority greater than the development of specialised curative services.

The recommended organisational structure and dental manpower establishment is aimed at providing an effective and efficient public dental health service, with worker fulfilment as a complementary objective.
ACKNOWLEDGMENTS

I wish to record my gratitude to my sponsors, the Ministry of Health of the Fiji Government and the Fiji Public Service Commission for releasing me from public duties to undertake the DPHDent course, and the World Health Organisation for awarding me a Fellowship for the study programme.

Special thanks are due to the Head of the Department of Preventive Dentistry, University of Sydney, Associate Professor PD Barnard, for accepting me to undertake the course under his tutorship. To him and Dr Shanti Sivaneswaran, my sincere thanks, they have broadened my knowledge of public health dentistry.

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To name a few of these persons:

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Professor FAC Wright Department of Preventive Dentistry University of Melbourne.

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Dr CJG Griffiths Head of Forensic Dentistry, Westmead Dental Hospital.
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I wish also to acknowledge with thanks the following Ministry of Health Officials of the Fiji Government who have provided the data and relevant information necessary in the preparation of this thesis.

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1 INTRODUCTION

We are surrounded by organisations of all kinds, large, small, formal informal, primary, secondary, economic, political, social and others. We are, inescapably, a part of many of them. The kinds of organisations to which we are closest, the ways they affect us, and the ways we affect them will change from time to time through our life, but organisations of some kind will always be a part of our life.

It has been demonstrated throughout human history that most individuals can achieve more of their goals or achieve them faster, easier, and more completely, through organisations. Since the dawn of time persons have learnt to use organisations to satisfy an ever increasing number of their needs.

This has meant the creation of more and more organisations with increasingly complex organisational structure. Organisations can serve our purposes without governing our lives if we understand their purposes and operations. Through increased knowledge we can improve the effectiveness of our organisations.

Organisations also create value because they permit specialisation and exchange. These two factors are foundations of modern society; they account for much of people’s time and energy. Time values are provided by organisations when they compress time by accomplishing some objectives faster than would otherwise be possible. Through their ability to store, accumulate and pass on knowledge, organisations allow persons to build upon the accomplishment of others.

In general, organisations have a synergistic effect. That is their outputs may differ from the sum of their inputs. Successful organisations create values in that participants’ benefits exceed their costs. Every organisation is formed to achieve some purpose or purposes, which can be broadly described as satisfying the wants, needs, desires, or objectives of it’s members.
Hicks and Gullet (1967) had classified organisations according to their principal objectives, and they are:

1. Service Organisations
2. Economic Organisations
3. Religious Organisations
4. Protective Organisations
5. Government Organisations
6. Social Organisations

The Fiji Dental Service, under the set up of the Ministry of Health, falls under a Government organisation, where there is a need to maintain order and continuing services to the public.

It should be noted that organisations have no inherent life span. Whether they are short lived or long lived depends upon their internal efficiency and responsiveness to their environment.

Hicks et al (1967) noted the important characteristics of long-life organisations as:

1. The desire for long life
2. The managerial philosophy that permits long life and
3. The creation of a formal structure that allows effective operations

Several sittings of the WHO Expert Committee on Dental Health since 1952, have discussed dental public health administration, examining it from the point of view of newly independent or developing countries.

Realising that Dental Public Health Administration is a special aspect of Public Health Administration it is the intention of this thesis to identify the weakness of the present set up of the Administrative System of the Ministry of Health in Fiji brought about by the organisational structure within the Ministry.

A brief history of dentistry in Fiji is presented through the development of its dental services. Special attention is drawn to the existing organisational structure of the Ministry of Health and its administrative effect on the Dental Division, and dental services as a whole.
In the first two sections there are definitions and organisation patterns - an effort is made to see such patterns as a consequence of various forces impinging on the dental profession and on the dental health services in such a manner that very little leeway is left to the dental public health administrator for change.

In the next two sections, the basic principles for the organisation, planning and evaluation of dental health programmes are discussed.

These are followed by two special sections, one devoted to training and the other to research in view of the relevance of these subjects to the advancement of dental public health practice.

The eighth chapter accommodates special consideration on the development of dental public health services necessary for Fiji.

The closing chapters produce a recommended structural organisation, and establishment to the Fiji dental services with discussion and conclusions on the proposed changes.
1.1 AIM OF THESIS

The purpose of this thesis is to review the existing organisational structure of the Ministry of Health in Fiji relative to the dental component with the view of developing an organisational structure:

i. That would eliminate the obvious duplication line of authority over the dental division and develop the Fiji Dental Service into an autonomous body within the Ministry of Health in Fiji.

ii. That would ensure the necessary development of curative and preventive dentistry in Fiji and their relation to the existing and proposed courses for dental personnel at the Faculty of Dentistry of the Fiji School of Medicine.

iii. That would produce incentives to the dental officers and dental auxiliary personnel, to make them realise that they are a part and parcel of development of general health as a whole.
1.2 DENTISTRY IN FIJI

The beginning of dentistry in Fiji on record was in 1921 when Mr Leslie Bruce Hart, an Englishman, established his private practice. He was followed by Mr H J Mount who put up a practice in Suva in 1930. Mr Mount was appointed Honorary Dentist of the Government Colonial War Memorial Hospital in Suva, where in 1941 he was instrumental in the dental training of medical students.

A young Fijian was trained to carry out simple medical treatment and this same man was later to be appointed as a Native Dental Practitioner. Ratri I L Vosailagi, a graduate of Bachelor of Dental Surgery at Otago University, New Zealand, became the first full-time Dental Officer appointed in 1943. He took over the training of dental students when Mr Mount retired and left the country.

The formal training in dentistry, however, started in 1945 and the first dental students graduated in 1947 from the Central Medical School, known before as the Suva Medical School and changed to the Fiji School of Medicine, in 1961.

A significant development for Fiji dentistry took place in 1951 when Guam Dental School closed and left twenty-nine partially trained students. They sought admission to the Central Medical School and Dr H L Cloud from the U S Trust Territories was commissioned to teach. He was succeeded by the husband and wife dentist team of Dr & Mrs Udick. (San Juan 1982)
1.3 THE DEVELOPMENT OF DENTAL SERVICES IN FIJI

The growth and development of dental services in Fiji is closely associated with the Fiji School of Medicine and post-graduate training at overseas schools.

The introduction of the Assistant Dental Officer Course programme into the Central Medical School saw the necessity and need of developing dentistry as a specialty in the health system of Fiji. The initial training of exodontia to final year medical students had to "phase-out" with the increase in dental manpower.

With the above progress, curative dental service began to develop in other specialised fields of dentistry. In the late sixties and during the early years of Fiji's political independence in the seventies, six dental officers were given opportunities for post-graduate studies at overseas dental schools, in Australian and New Zealand universities, under the sponsorship of the World Health Organization (WHO) and the South Pacific Commission (SPC) to study orthodontics, pedodontics, clinical dentistry, oral surgery and prosthodontics. All these study courses were of short-term duration - some lasting for six months and others for a twelve month period.

Thus curative treatments began to diversify from dental extractions, dental fillings and prophylactic procedures, which were the "norm of the day" in the late fifties and early sixties, at the only Governmental Dental Clinic at that time. This clinic, which also served as the training centre for dental personnel, was situated at the Central War Memorial Hospital (CWMH) in Suva. The clinic later became known as the Dental Department.

The socio-economic development in Fiji brought with it numerous health hazards. Changing dietary patterns of the people, from their centuries-old natural diet to use of refined carbohydrates, brought about a marked increase in dental caries in children living in urban areas.
The magnitude of dental problem was revealed in the epidemiological surveys conducted on the request of the Fiji Government and carried out by Wong (1965), Speake et al (1978), and Speake and McKegg (1980). Results showed an increase in the prevalence of dental caries amongst school children from "low" in 1965 to "moderate" status in 1980. This was based on the WHO classification (1980) of low at 1.2 - 2.6 DMFT and moderate from 2.7 - 4.4 DMFT at age 12 years. The latter two surveys also showed that dental caries had become prevalent in the rural dwellers.

The first dental public health measure ever taken, out of a clinic setting, was the formation of the School Dental Service Scheme. The preventive measure of an Organised Toothbrushing Scheme, in schools, followed and came into operation in 1957. The two schemes were developed in the attempt at controlling dental diseases at an early age.

The School Dental Service Scheme was made viable with the donation of a Mobile Dental Clinic by the Colonial Sugar Refining Company Limited (CSR) and the Rotary Club International. Later, two smaller dental units were acquired from the same organisations in the late sixties, with the opening of two new dental clinics in Lautoka and Labasa. The two clinics developed into divisional dental centres for the Western and Northern Divisions, respectively.

After independence in 1970, Fiji was experiencing a steady growth and expansion of services in all its spheres of development. Dental services began to spread to the rural areas in the divisions and district levels with the opening of new dental clinics in those areas (Figure 1).

However, the dual role of the Assistant Dental Officer, who by now were called Dental Officers (and by law given the title of Doctor), as clinicians as well as being responsible for the School Dental Service, were physically burdensome. Thus, the Dental Hygienist/Therapist Course was instituted primarily to take charge of the School Dental Service.
Figure 1  Distribution of Dental Clinics in Fiji - 1992
The first batch of Dental Hygienist/Therapists graduated from the Fiji School of Medicine in 1973. The incorporation of the new programme of study saw the discontinuance of the Dental Hygienist Course, which had commenced in the early 1960's to assist the Assistant Dental Officers, and carry out simple scaling and prophylactic procedures.

At the same time, the Junior Dental Assistant one-year training programme commenced. Their role was non-operating to provide chair-side assistance to Dental Officers and Dental Hygienist/Therapists.

As it became evident that the number of edentulous continued to rise because of periodontal disease in older persons, training of dental technicians was "stepped-up" in the early seventies. Prosthetics had, therefore, become a daily work procedure in the three main established clinics in Suva, Lautoka and Labasa. In addition, to their daily routine of making partial and full dentures, Dental Technicians were further trained and given the additional responsibility of maintaining dental units and equipment in their respective divisions. Gone were the days when the foot-pedalling drilling machines were in use. The Dental Division, through the Ministry of Health, had begun acquiring modern dental units and other modern dental equipment for the delivery of its curative dental services. Consequently, there was a marked improvement in services provided.

A major deciding factor in the utilisation of any service is determined by the population growth. With the political and economic developments in Fiji there was also a steady rise in population. The growth rate between 1966 and 1976 at census was 2.1 per cent. The total population in the 1986, census was 715,375. This was an increase of 127,307 over the 1976 population, giving an annual population growth rate of 2 per cent over that decade (Tables 1 and 2).
Table 1  Fiji Population Census from 1936 - 1986

<table>
<thead>
<tr>
<th>Census Year</th>
<th>Total Population</th>
<th>Intercensal Increase</th>
<th>Intercensal Annual Increase (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1936</td>
<td>198,379</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>1946</td>
<td>259,638</td>
<td>61,259</td>
<td>2.7</td>
</tr>
<tr>
<td>1956</td>
<td>345,737</td>
<td>81,099</td>
<td>2.9</td>
</tr>
<tr>
<td>1966</td>
<td>476,727</td>
<td>130,990</td>
<td>3.3</td>
</tr>
<tr>
<td>1976</td>
<td>588,068</td>
<td>111,341</td>
<td>2.1</td>
</tr>
<tr>
<td>1986</td>
<td>715,365</td>
<td>127,307</td>
<td>2.0</td>
</tr>
</tbody>
</table>

Table 2  Fiji’s Estimated Population Growth 1982 - 1986

<table>
<thead>
<tr>
<th>Year</th>
<th>Estimated Population</th>
<th>Crude Birth Rate/1,000</th>
<th>Crude Death Rate/1,000</th>
<th>Natural Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>1982</td>
<td>663,485</td>
<td>32.2</td>
<td>5.6</td>
<td>2.6</td>
</tr>
<tr>
<td>1983</td>
<td>677,481</td>
<td>31.8</td>
<td>5.3</td>
<td>2.6</td>
</tr>
<tr>
<td>1984</td>
<td>690,681</td>
<td>29.8</td>
<td>5.2</td>
<td>2.4</td>
</tr>
<tr>
<td>1985</td>
<td>701,705</td>
<td>30.0</td>
<td>5.2</td>
<td>2.4</td>
</tr>
<tr>
<td>1986</td>
<td>715,375</td>
<td>28.6</td>
<td>5.5</td>
<td>2.3</td>
</tr>
</tbody>
</table>
However, following the events of 1987 Fiji experienced a decline in population. Based on the 1986 population figures and recent data on births, deaths and immigration, an actual drop in population was recorded for 1987. In 1988, positive growth resumed. The projection for Fiji’s total population in 1990 was 726,000, representing a population growth rate well below 2 percent. (Fiji Today 1990)

With the sustained growth of the population in the sixties came the urban drift for people seeking employment in the main urban centres. The change in living environment brought with it changes in lifestyles and dietary pattern resulting in a marked pattern of distribution of dental caries in urban and rural dwellers, as previously mentioned.

Thus, the second community-based preventive measure taken was the fluoridation of Suva City’s water supply in 1969.

Another outstanding feature, as an outcome of the steady increase in population was the building of new primary schools in the urban and rural areas to accommodate the increasing number of children. This, however had a nullifying effect on the operating dental manpower strength graduating from the Fiji School of Medicine, which were evidently insufficient to provide the necessary services required in the Dental Clinics and the School Dental Service.

The two preventive measures already in force i.e. the fluoridation of Suva Water Scheme and organised tooth brushing in schools, had a very minimal effect. The fluoridation effect was localised to residents of Suva City only. The outcome of the toothbrushing scheme could not be proven to have any significant result because of time-factor. Toothbrushing was carried out only once a day during the 184 days in the school year. It could not be ascertained that toothbrushing continued to be practised at home during the second half of the year. However, educationally, the scheme provided an oral hygiene practice essential to the maintenance of the personal daily hygiene exercise.
As the strategy for controlling dental diseases was focussed mainly in school children dental manpower strength and facilities provided could not accommodate the increasing number of schools and children. Thus, the Dental Division had to pursue other preventive measures to controlling dental caries with the minimal resources at its disposal.

The inception of Mahler’s WHO concept of Primary Health Care (PHC) in 1978 as the strategy for achieving "Health for All by Year 2,000", instigated the pursuance of prevention as a public health measure of controlling disease. Dental diseases are described as non-communicable and therefore can be prevented.

Topical fluorides were introduced into non-fluoridated areas as a pilot project co-ordinated with the help and advice of the South Pacific Commission (SPC). The methods used were:-

i) NaF rinse: (3,000 children, 6-13 years), NaF was available in powder and tablets and was dissolved in water to give a 0.290 NaF solution. The children were asked to rinse the solution in their mouths for one minute before throwing it out. There were about 20 rinsing sessions per year and they were supervised by members of the dental staff and teachers.

ii) SnF₂ Brush-in programmes (1,000 children, 6-13 years), 10% SnF₂ paste was used and the children brushed their teeth for about three minutes. This was done six times a year.

iii) APSnF₂ Double Brush-in programme (1,500 children, 6-13 years). A 1.23% APF gel followed by 10% SnF₂ paste were used for brushing and this was repeated three times a year.

Both of the Brush-in programmes were supervised by dental staff, teachers and mothers. After one year of the implementation of the programme it was found that NaF rinse produced a 33% reduction in caries, SnF₂ a 34% reduction and APF/SnF₂ paste a 41% reduction in dental caries (Hussein 1981).

However, the two Brush-in programmes were discontinued due to financial constraints. As of 1991, the 0.2% NaF brush-in had been introduced and carried out on school children.
Fissure sealants have been recently introduced in Suva and have yet to gain momentum in other dental centres.

Dental Health Education was developed and became a routine exercise during every school visit. Dental health talks with emphasis, on choice of diet and toothbrushing after meals are now given regularly to school children. Other target groups for dental health talks are -

a) mothers' clubs
b) participants of primary health care services
c) antenatal and postnatal mothers
d) teachers
e) adult community during dental health week.

Further postgraduate training in the field of Public Health Dentistry was seen as necessary in the planning, implementation and evaluation of successful dental public health prevention measures. Therefore, in the 1970's and 1980's a total of nine dental officers had undertaken postgraduate courses leading to Diplomas in Public Health Dentistry at overseas universities in New Zealand, Australia and the Phillipines.

These postgraduate diploma holders have contributed notably in the development of dental public health services in Fiji. Two became Head of the Dental Division during their time while one was given the responsibility as Head of the Health Education Unit of the Ministry of Health. Two others are presently holding principal posts and heading two divisions.
1.3.1 Training of Dental Manpower

The Fiji School of Medicine has a long and distinguished record in training of medical, dental and paramedical personnel with the knowledge, skills and attitudes that are relevant to the health needs of the people of Fiji and the South Pacific. The first dental personnel to be trained were Assistant Dental Officers. They were given a three year course with duties and responsibilities analogous to those of Assistant Medical Officers. The Fiji Graduates from both programmes are registered under the same Act - Medical and Dental Practitioner Act Cap 255. Later dental hygienists were also trained. The programmes of training for both has been discontinued; the one for hygienists in 1973, and the one for dental officers in 1985 (Davies 1990).

In 1973 those who were previously trained as dental hygienists were offered a conversion course of one year’s duration and awarded a Certificate of Dental Hygienist Therapy. The offer for conversion course ceased in 1975. In 1976, there was the first intake of students to the certificate of Dental Hygienist Therapist. Two thirds of the course content came from the previous dental hygienist curriculum, and one third from the curriculum for the dental officer Diploma in Dental Surgery (DSD).

From 1986 undergraduate dental students were sent to overseas universities either in Otago (NZ) or Adelaide (Australia) to study dentistry leading to Bachelor of Dental Surgery.

However, the termination of the dental officer course in 1985 brought immediate problems in its train. To meet this emergency the three-year Diploma in Dental Therapy (the name dental hygienist/therapist had been reduced to dental therapist), was up graded to enable the therapists to take independent responsibility for managing static clinics. Holders of the former certificate of Dental Hygienist Therapist were offered a six-month conversion course to make them eligible for the new Diploma after passing the prescribed examination.
The staffing and facilities for teaching dental personnel have deteriorated since 1978 (Davies 1990). From 1978 to 1981 the teaching staff consisted of four full-time tutors and four part-time instructors. In 1982 there were five full-time staff including a visiting Professor, and six part-time staff. The total staff was again eight in 1984 and 1985. There was a dramatic downturn in 1986 when the total staff was reduced to five. The Department of Health withdrew the participation of service-staff as part-time teachers. Thus, in the words of the Annual Report of the Fiji School of Medicine for that year: "For the first time since the inception of the Dental Studies Course in 1942 there were no part-time lecturers assisting the full-time staff in the instruction and supervision of students in Dental Studies: it was the end of an era".

At present two full-time and three part-time clinical tutors are responsible for the training of Junior Dental Assistants, Dental Technicians and Dental Therapists.

Davies (1990) had noted that the present facilities for clinical teaching are most unsatisfactory. Two chairs in the main Colonial War Memorial Hospital Dental Department are available for student use. The use of a very busy service clinic for teaching creates insuperable problems which must be overcome if the Fiji School of Medicine is to resume its former status as the Regional Training School for dental personnel.

1.3.2 Dental Manpower Strength and Services Provided

As of 1992 there are 18 Dental Officers, 41 Dental Therapists, 9 Dental Technicians and 50 Junior Dental Assistants. There are also 18 active private dental practitioners at the present time.

There had been a great reduction in the dental manpower strength when comparing the 1992 to the 1986 figures. (Table III). The drop in the number of Dental Officers had been recorded at 63%, Dental Therapists 9%, Dental Technicians 31%, and Junior Dental Assistants at 7%. For the total number of Dental Personnel there had been a reduction by 27%
Table 3  Fiji Dental Establishment 1986 - 1992

<table>
<thead>
<tr>
<th>Year</th>
<th>Dental Officer</th>
<th>Dental Therapist</th>
<th>Dental Technician</th>
<th>Junior Dental Assistant</th>
<th>Total</th>
<th>Approved Establish/ ments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1986</td>
<td>49</td>
<td>45</td>
<td>13</td>
<td>54</td>
<td>161</td>
<td>170</td>
</tr>
<tr>
<td>1987</td>
<td>39</td>
<td>40</td>
<td>10</td>
<td>49</td>
<td>138</td>
<td>170</td>
</tr>
<tr>
<td>1988</td>
<td>30</td>
<td>41</td>
<td>8</td>
<td>52</td>
<td>131</td>
<td>130</td>
</tr>
<tr>
<td>1992</td>
<td>18 (33)</td>
<td>41 (49)</td>
<td>9 (9)</td>
<td>50 (79)</td>
<td>118</td>
<td>150</td>
</tr>
<tr>
<td>% Reduction</td>
<td>63%</td>
<td>9%</td>
<td>31%</td>
<td>7%</td>
<td>27%</td>
<td>12%</td>
</tr>
</tbody>
</table>

Simultaneously, there had been a dramatic increase in the dentist population ratio. While in 1986 the ratio was 1:14,599 in 1992 it has been recorded as 1:40,333. The latter is based on the projection for Fiji’s population in 1990 as 726,000.

There is now an equal number of dentists in the government and in private practice. The private dentists cater for mostly adults who purchase dental care on a direct fee for service basis.

There are twenty-two (22) state clinics operating in the government dental service today, six of these are situated in the Northern Division, ten in the Central-Eastern and six in the Western Division. (Figure 1).

The present dental services include:

i) School Dental Service - all children up to the age of 15 years are given free dental treatment as they are the priority group for the government. There are 685 primary schools catered for by this service. Service to schools is provided either by mobile dental clinic (only one which is
operating in the Suva area) or by transport provided by the Divisional or Sub-divisional medical officers. School dental visits are carried out by Dental Therapists and Junior Dental Assistants in their respective districts.

ii) Clinics and hospital services - these services provide dental care for both adults and children and the types of treatment include:

i) relief of pain
ii) minor oral surgery
iii) conservative dentistry including endodontics
iv) periodontics
v) orthodontics
vi) prosthodontics

The writer noted that in Section 10.4.19 on Page 146 of the Fiji National Development Plan it was stated that there would be an extension of the main forces of the dental service activity in schools and to rural and remote areas. However, the service was unable to achieve this objective because of shortages of staff and transport. In 1988, for example, only 28 percent (193 out of 685) schools were visited. In 1986 the previous eight mobile dental clinics and three caravans were reduced to three mobiles and two caravans, only one of which was in service. By 1990 the three mobiles were 30 years old and under constant servicing. Only one is in service in 1992. Of the three jeeps only one is in service.

In the Ministry of Health’s Annual Report for 1987 and 1988 it is noted that "In 1987 a total of 199,487 attendances were recorded of which 90,212 (45%) are children. The Division conducted 236,735 procedures, a "drop" of 33% on 1976...... The political events of 1987 accounted for the deficits in attendances and procedures..."

While the major factors which contributed to the "drop" in work-output are the shortage of manpower and lack of support facilities there are other underlying factors that contributed to the downward trend in the outcome of services provided. The shortage of manpower, more especially in the Dental Officer
strength in the Government service, with the consequent increase in the private practice, is attributed to the limited opportunities and lack of incentives provided to government dentists.

It could be seen, however, that the decline in dental manpower strength began in 1987 (Table 3). For Dental Officers there was a noticeable decrease by 70%, 12% for Dental Therapists, 23% for Dental Technicians and 9% reduction for Junior Dental Assistants. The approved manpower establishment for 1986 and 1987 were 170. There was a decrease by 20% in 1988. In 1992 the approved establishment had increased to 150.

The writer believes the political events of 1987 only further aggravated the already existing situation in the Dental Service.
1.4 THE PRESENT ORGANISATIONAL STRUCTURE OF THE DENTAL DIVISION IN RELATION TO THE MINISTRY OF HEALTH

The Minister for Health is the political head of the Ministry with the Permanent Secretary for Health in charge of the day to day administration of the ministry. They are supported by Headquarters based staff administratively divided into four Directorate or Divisions, namely:

1. Administration and Finance
2. Preventive and Primary Health Services
3. Hospital and Support Services
4. Nursing Services

With the inception of the Primary Health Care Concept the Dental Division was organised under Preventive and Primary Health Care Services. (Tables 4 & 5).

The Assistant Director of Dental Service is responsible for the planning, development, review and implementation of the national dental health programme. He advises the Permanent Secretary for Health on dental health and, gives support and advice to the Director of Preventive and Primary Health Care. Administratively, this office (ADDS) comes under the Director of Preventive and Primary Health Care Services.

At the Divisional Level, the Principal Dental Officer’s responsibility is to plan, develop and review implementation of dental health programme in his/her division. He/she advises the Assistant Director of Dental Services on matters pertaining to Dental Health and provides support and advice to the Divisional Medical Officer and dental staff in his/her division on dental health matters.

Unlike in the Central/Eastern Division where the creation of the Principal Dental Officer post in 1990 to look after the Division with the existing Principal Dental officer at the Dental Department of the C.W.M. Hospital responsible for the running of that unit, the Western and Northern Division Principal Dental Officers are still caught in the "web" of administrative set up.
Table 4  Classification of Dentistry under Preventive Services

**PRIMARY ORAL HEALTH CARE (POHC)**

<table>
<thead>
<tr>
<th>Preventive oral health care services</th>
<th>Emergency oral health care services</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prevention of onset of oral disease</td>
<td>Prevention of further progression of disease</td>
</tr>
<tr>
<td>Components (a) Integration of general and oral health preventive programmes</td>
<td>(a) Temporary Fillings</td>
</tr>
<tr>
<td>(b) Information</td>
<td>(b) Simple Class &amp; II Amalgam Fillings</td>
</tr>
<tr>
<td>(c) Advice</td>
<td>(c) Scaling and Polishing with oral hygiene instructions</td>
</tr>
<tr>
<td>(d) Plague Control</td>
<td>(e) Smoothening of minimally fractured tooth surfaces surfaces and applications of desensitising agents on such surfaces.</td>
</tr>
<tr>
<td>(e) Dietary Control</td>
<td>(d) Medication</td>
</tr>
<tr>
<td>(f) Nutrition</td>
<td>(e) Initial management of RTA patients involving injuries to the maxillofacial complex.</td>
</tr>
<tr>
<td>(g) General</td>
<td>(f) Reduction</td>
</tr>
<tr>
<td>(h) Fluorides</td>
<td>(g) Referrals</td>
</tr>
<tr>
<td>(i) Fissure Sealants - HRPs.</td>
<td>(a) Provision of dentures</td>
</tr>
</tbody>
</table>
Table 5  Organisation Structure of the Dental Division

MINISTER OF HEALTH

PERMANENT SECRETARY FOR HEALTH

DIRECTOR OF PREVENTIVE AND PRIMARY HEALTH CARE

ASSISTANT DIRECTOR OF DENTAL SERVICES

PRINCIPAL DENTAL OFFICER

SENIOR DENTAL OFFICER

DENTAL OFFICER

DENTAL THERAPIST  JUNIOR DENTAL ASSISTANTS  DENTAL TECHNICIANS
With the offices of these Divisional Dental Heads located in the Dental Department of the two Divisional Hospitals the Principal Dental Officers are, therefore, administratively under the jurisdiction of the Medical Superintendents, who in turn are directly responsible to the Director of Hospital Services.

The writer, therefore, wishes to review the existing organisational structure in the hope to eliminate the existing duplication of authority, thus creating incentives through recognition in the development of curative and preventive dental services.

Thus, the production of this thesis.
2 DEFINITIONS

For the production of the body of this paper the writer wishes to define terms that shall be used throughout hoping that they shall be clearly understood in the context they are used.

2.1 HEALTH
Health has been defined by the World Health Organization as a state of physical and social well-being and not merely the absence of disease or infirmity. On the basis of this positive and unified concept of health, dental health becomes an inseparable part of the general health and only gains meaning when considered in this context. (WHO 1957)

2.2 DENTAL HEALTH
Specifically dental health may be defined as a state of complete normality and functional efficiency of the teeth and supporting structure and also of the surrounding parts of the oral cavity and of the various, structures related to mastication and the maxillo-facial complex (Slack 1981).

2.3 DENTAL AND DENTIST
The word dental is used to apply to all objects, actions and programmes concerned with the oral cavity and its related and supporting structures, and not in the normal sense referring solely to teeth. Similarly the word dentist is used to describe the professional person who is authorised by education and by law to treat diseases of the oral cavity and related structures, and it is not meant to describe a person who treats only teeth (WHO 1965).

In some countries this professional person is known as a stomatologist and the services he renders are known as stomatological or odontostomatological services. However, in much of the world the words dentist and dental are used to convey essentially the same meanings.
2.4 DENTAL AUXILIARIES

Are specific duties and responsibilities assigned to some trained dental personnel assigned to compliment the professional duties of the dentist.

Dental Auxiliary Personnel can be classified into

a) Dental Assistant
b) Dental Hygienist
c) Dental Therapist
d) Dental Technician

2.5 DENTAL HEALTH SERVICES

Dental Health Services may now be defined (WHO 1965) as those services which are designed to promote, maintain, or restore dental health. They may include educative, preventive or treatment activities in varying proportions.

2.5.1 Educative Activities

Educative Activities are those that are concerned with individuals and communities how dental health contributed to general health, how it should be attained and preserved, and how dental and oral disease may be prevented, and with encouraging individuals and communities to transform knowledge into action.

2.5.2 Preventive Activities

Preventive Activities are those which are concerned with preventing the inception of dental and oral diseases or with intercepting their progress.
2.5.3 Treatment Activities

Treatment Activities are those which are concerned with the early recognition of dental and oral diseases, with limiting their progress, and with the repair of damaged and restoration of functional efficiency.

Dental Health Services vary considerably according to various factors to be discussed in the next section, but may be classified in three large groups:

GROUP 1 Dental services provided by dentists and dental auxiliaries and financed by direct arrangements with the patient or through some form of organization of payment not involving government. In this group would fall prepayment plan, services organised by labour and other consumer groups and by private insurance. Companies or private philanthropic foundations, and other plans without government participation.

GROUP 2 Dental services provided by dentists and dental auxiliaries who are partly or entirely remunerated by government, but who are not considered to be government employees.

GROUP 3 Dental services provided by dentists and dental auxiliaries who are employed by the government.

2.6 GOVERNMENT

The word government is taken to imply national, regional and local authorities which are part of the public administration of the country.

They may be in the health sector or in other sectors of public administration, such as, education, labour, the armed forces.

In many instances services in the second group are financed by funds coming from other sources such as employers’ and employees’ contributions. This is the case of health services in several countries where large social security institutions provide health benefits to large segments of the population.
2.7 PUBLIC DENTAL HEALTH SERVICES

These are dental health services of an educative, preventive or curative nature, organised by government (central regional or local) with its exclusive resources or with participation from other individuals or agencies, or through organised community efforts (Slack 1981).

2.8 DENTAL ADMINISTRATOR

The term is used throughout this paper to denote the Chief Dentist with administrative responsibility in the general health administration. His function will depend upon the pattern of the organisation dental public health services of the country and may be either advisory, administrative or executive, or may represent varying combinations of the three.

Throughout this paper attention will be focused on governmental services, especially those coming under the ministries or departments of health at national or intermediate levels. In these cases, it is recognised that the dental administrator, although his primary responsibility might be the operation of services to certain sectors of the community, should be interested in all types of dental services and should, by indirect ways, inspire and stimulate the development of better dental health services for the community without regard to which of the three groups they belong.

This will become more clear when the next section is developed.

Presentations in chapters 2 to 7 are based on World Health Organization, Technical Reports and WHO expert Committee on Dental Health, 1957 - 1965.
3 PATTERNS OF ORGANISATION OF DENTAL HEALTH SERVICES

The pattern of organisation of dental health services in a given country is a result of the action of a variety of factors acting simultaneously upon the dental profession and upon the community that it has an obligation to serve. These factors will now be analysed and their possible influence on the scope of public dental health services indicated. At the end an attempt will be made to indicate a few general patterns and the relative roles in each one of the broad groups of dental health services outlined in the previous section.

3.1 SOCIAL AND ECONOMIC FACTORS

These factors, in the form of traditions, religious beliefs, level of general education and of family income in the community, influence the over-all sense of dental awareness of the average individual, the demand for dental services and the over-all priority attributed by the community as a whole to dental health problems. The emphasis to be given to health education programmes and the finances that can be made available to dental health activities are both closely linked to the socio-economic situation as reflected in the levels of living in the community.

3.2 POLITICAL FACTORS

The respective roles of government, non-governmental agencies, and private dental practice in the provision of dental health services are determined to a great extent by historical factors and by the political effects of the prevailing social philosophy. In some countries the part played by central government may be very large, in others it may be merely supplementary to meet the needs of certain limited groups. In some countries, the resources of private practice and government funds have been brought together to provide services to the public on a very broad scale.
3.3 DEMOGRAPHIC FACTORS

The size, distribution, composition and rate of growth of the population influence the pattern of services. For instance, it is difficult to organise dental services for widely scattered populations with poor communications and living under extreme climatic conditions. The cost of dental care for such population may be prohibitive. There may not be dense enough population to warrant private practice, even in cases when the economic situation of the community is good.

Countries with a high birth rate face a serious problem in developing school dental programmes, especially for more mobile population groups.

3.4 EXTENT AND NATURE OF DENTAL NEEDS

The relative and over-all incidence of the various dental and oral diseases may determine the pattern of predominant practice in a country and influence the provision of dental public health services.

3.5 DENTAL MANPOWER

The ability of the dental manpower of a country to meet existing needs and to provide for growth of dental services may be an important factor in shaping the pattern of services. For instance, a given country may have enough staff to maintain equilibrium between supply and demand as, for example, in the case of Sweden; or as in the case of Malaysia, it may have to resort to auxiliary personnel when contemplating an extensive incremental dental care programme for schoolchildren. In effect it is primarily the capacity of the dental profession itself which is the important variable factor and the one which will determine the form in which a dental public health service will develop.
In brief, the factors just enumerated and others that still could be cited, influence the organisational pattern to be established in a country. Although each country has its own peculiarities, broadly speaking it may be said that some general patterns exist, each of which has many variations. These different patterns are formed by:

a) Countries with a centrally-planned economy where dental health services are considered a responsibility of the State and where a network of dental services staffed by salaried personnel covers the country. In these countries, the predominant system is that of services described in Group 3, but some services of groups 1 and 2 may also exist.

b) Countries with an economic system based on free enterprise, and where there is a similar social philosophy with regard to provision of dental health services. In these countries the bulk of dental services are provided under a private practice system, and the distribution of professionals in the country is governed by the law of supply and demand. More recently, systems of payment other than by direct arrangement between the patient and the dentist have been evolving. In these, the initiative is taken by the dental profession itself and by consumer groups which together have developed systems for group purchase of dental services with government playing only an advisory role. In these countries the services of groups 2 and 3 are available to different groups, and central government plays an important role in fostering activities that are basic to all types of services.

c) Countries with an economic system based on free enterprise but with a social philosophy leading towards increasing governmental responsibility in the provision of health services. In these countries dental health services may be offered to large sectors of the population under different types of health insurance plans, financed to a greater or lesser extent from governmental funds. A large part of the services may be provided by private dental practitioners who have agreed to render services under pre-
established conditions. In these countries government services with salaried dentists are usually reserved for selected groups, such as schoolchildren. Private practice usually has a significant role in rendering services to certain groups of the population, or in supplementing the dental care available through the health insurance plans.

It may be said that dental health services of the three groups (1,2 and 3) are available to some extent in most countries. What varies is the contribution that each group makes to the total amount of dental health services produced in the country. Fiji is classified under Category 3 but some services under Group 1 and 2 also exist in its dental health system.
4 ORGANISATION OF DENTAL PUBLIC HEALTH SERVICES AT DIFFERENT ADMINISTRATIVE LEVELS

4.1 LEGISLATION

The primary legal basis for all public health services is usually found in the constitutional powers of a nation or other political jurisdiction. As a general principle, however, it is desirable to have definitive legislative or other statutory powers for the specific dental public health services, and such powers should be obtained wherever national political circumstances permit.

4.2 ORGANISATION

4.2.1 Formation of a dental unit and appointment of a dental administrator

The creation and direction of a dental public health service necessitates the formation of a dental unit which may be consultative, advisory or administrative and it is considered essential that the head of such a unit should be a dentist because of his specialised and particular knowledge of dental problems.

4.2.2 Authority and responsibilities

To facilitate the organisation and administration of a public dental health programme, adequate authority should be vested in the dental administering. This should apply at all levels, from the person of the dental administrator or adviser in the central health administration to those in lesser administrative posts. Experience has shown that without the necessary delegated authority to act with a reasonable degree of autonomy, the dental director is hampered in developing a dental health service with the total public health programme.

Authority involves both duties and responsibilities. These should be defined and committed to paper so that at all administrative and professional levels they are clearly recognised and understood.
4.2.3 Access of the dental administrator to higher authority

It is considered desirable that the head of the dental unit should have direct access to the highest administrative authority in the central health administration. In this way the dental point of view concerning such matters as the type of services required to provide dental health and the necessary means of this end can from time to time be presented at a high level.

Indirect presentation of the dental problem and reliance solely on written submissions can often fail to produce sufficient appreciation of the dental needs or to secure an equitable share of the total health budget for dental purposes.

4.2.4 Provision for decentralisation

Decentralisation should be effected as soon as it is apparent that the rate of growth, expansion of functions or increase in resources calls for the establishment of intermediate levels of administration to maintain and increase efficiency of the service.

Decentralisation requires the establishment of subordinate dental units in charge of subordinate dental administrators. They should have sufficient delegated authority both to plan and organise the services which become their responsibility and to direct and supervise their staff. Retention of too much authority in the central administration can have a stultifying effect on the activities of subordinate units and diminish the efficiency of the organisation as a whole.
4.2.5 Communications and lines of authority

The establishment and maintenance of well-defined channels of communication and lines of authority in an organisation facilitates a common understanding of policies, objectives and procedures and encourages the full and informed support of all those concerned in providing the service and in implementing the over-all plan.

4.2.6 Distribution of operational personnel and facilities

The operational personnel and facilities must be so disposed that the dental needs and demands of the community can be met expeditiously and efficiently. The manner in which they will be disposed will depend essentially on the nature of the population distribution, whether predominantly urban, suburban or rural, and on the type of service rendered.

Whatever the nature of the distribution, however, provision should be made for the supply of all the basic as well as special needs of the public and this will necessitate the location of specialist staff and facilities at strategic centres. Without intending to define the scope or responsibility for specialist services the writer consider that services which are difficult to organise, for instance those involving the correction of maxillofacial deformities, such as cleft lip or cleft palate, should be the responsibility of government.

4.2.7 Formulation of a government policy

When a policy affecting the dental health of the people is being considered by a government, those responsible for the administration of the dental health service should be consulted. One of the primary functions of a dental administrator is to act as an adviser to the government on all such matters. Once a policy is adopted, however, it becomes his responsibility to ensure that the policy is implemented in accordance with the government’s wishes and intentions.
4.3 PERSONNEL

4.3.1 Educational qualifications for higher posts

A candidate for appointment to a higher post in a public dental health service should have sufficiently wide clinical experience and professional ability to enable him to act as adviser on professional and technical matters. Professional dental education and experience alone do not usually supply that special knowledge and expertise that are required for the satisfactory undertaking of important administrative responsibilities and duties. It is highly desirable that special advanced training and experience in public health administration be a pre-requisite for appointment.

4.3.2 Duties and responsibilities

As stated earlier in the paper the efficiency of a public health service depends on the understanding by the whole staff of the general policy that is being followed. In addition, each individual member should receive a precise written definition of his specific duties and responsibilities.

Periodic discussions between supervision and subordinates about these duties and responsibilities is advantageous. By providing opportunities for review or adjustments they will prevent misunderstandings that lead to loss of good staff and to inefficiency.

4.3.3 Staff incentives

If a public health service is to be both successful and efficient it must offer a satisfactory career for the staff which it has to attract and retain. Incentives should include adequate remuneration, with a salary scale that allows for increases according to length of service, experience and merit. Attention should be given to working conditions and facilities.
When staff are required to serve in remote or less attractive centres, it may be necessary to provide for additional benefits; these may take the form of increased remuneration or special privileges. Opportunities should be provided for training in administration or for further study and clinical experience to fit the staff for high posts. Increased responsibilities in a particular field of professional activity should be accompanied by appropriate advances in the salary scale.

4.4 FINANCES

It is desirable, if the country’s financial system permits, that provision should be made in financial estimates, budgets or appropriations for the allocation of special funds for the dental service. Funds will be required not only for the initial capital cost of establishing a service but also for the annual expenditure on running costs and for development, expansion or improvement. In addition it is essential that from time to time separate and specific allocations of funds should be made for any special developments or projects.
4.5 FACILITIES

Adequate physical facilities should be provided for those engaged in the supply of dental public health services.

Building and clinical accommodation generally should meet all modern requirements in terms of light, space, convenience and appearance but need not be extravagant in either design or construction. Equipment and supplies should be of a modest utilitarian nature conducive to the supply of good quality dental services. Some measure of standardisation is considered desirable and the centralisation of the source of supply has distinct advantages.

Portable equipment which is now available is convenient and efficient. It can be transported easily and offers a useful means of providing services at various centres and a practical and less expensive alternative to the mobile dental unit.

Assuming that suitable roads exist, mobile dental units, either of the self-propelling or of the trailer type, have a use is servicing small, widely distributed communities when facilities cannot for practical reason be concentrated in one or more permanently fixed treatment centres. Attention is, however, drawn to the high initial cost of mobile dental clinics, and to the appreciable running charges and constantly recurring maintenance expenses that they involve. Whenever possible a fixed treatment centre, even if it necessitates the use of portable equipment, should be established in preference to mobile units.

Adequate facilities of the kind needed in a general hospital for the provision of the special dental services required should also be available.
4.6 MONITORING AND EVALUATION

The role of a supervisor in a public health service should be that of counsellor and adviser to the staff under his control, and this calls for considerable tact and understanding, clinical competence and a well developed sense of leadership.

The purpose of supervision in a dental public health service is to maintain and improve the quality and quantity of the service provided. The form that this should take will depend upon the particular manner in which the services are provided. In the case of programmes that rely on the participation of private dental practitioners to provide the dental care on a fee-for-service basis, indirect supervision can be exercised by the central health administration by means of a system of checking the treatment claims. Direct supervision should also be exercised by periodic examination of the treatment rendered by the private dental practitioner. It is desirable that these examinations be conducted with the practitioners’ knowledge by a panel or board of examiners, themselves practitioners, set up for the purpose by the dental association or society.

In the case of dental personnel employed by the dental health administration, a method of direct supervision should operate which ensures that an adequate quality and quantity of dental service is provided. This can be achieved by periodic inspection, which be extended beyond the point of mere evaluation to include constructive criticism, advice and encouragement.

Supervision of dental auxiliaries by dentists is essential. In the case of school dental therapists this should be carried out by dentists who fully understand the functions of this type of dental auxiliary, the exact scope of their training, and the range of work they are required to perform.
5 GENERAL PRINCIPLES OF PLANNING AND EVALUATION OF DENTAL PUBLIC HEALTH PROGRAMMES

5.1 PLANNING

Planning and evaluation are complementary processes in the administration of dental health services. The writer recognised the fact that a good plan should contain in itself provisions for periodic evaluation and that the results of this evaluation should be fed back to the original plan and used for its readjustment. For this reason it was decided to include mention of evaluation as one the phases of the planning process, in addition to its more complete discussion under the next heading.

Most countries prepare national health plans as part of a long-term development programme. These plans will of course be co-ordinated with the over-all national development plan, but to ensure that adequate provision is made for dental health it is important that dentists should be included on bodies set up to advise on the drafting of national plans in so far as they relate to health. In the remainder of this section, planning will be dealt with in a general way, but attention will be directed especially towards local programmes.

The following six phases have been identified in planning and should follow each other in a logical sequence: (WHO 1969)

1) Collection of information
2) Establishment of priorities
3) Setting up of targets and objectives
4) Consultation and co-ordination
5) Drafting of the plan
6) Periodic evaluation and readjustment of the plan

Obviously the last phase mentioned can take place only when the plan is already being implemented, but it has to be foreseen and decided upon in the early stages of planning.
5.1.1 Collection of information

Adequate planning for dental health services requires that the dental health problem be examined in the context of the prevailing health problems and of the over-all situation of the country, region or community for which the plan is being made. In the case of a comprehensive plan this calls for information based on a study of the following factors:

a) The prevalence of dental and oral diseases and the amount of unmet dental needs. Simple types of surveys might be used for this assessment, keeping in mind that the costs and time of collecting information should be kept as low as possible.

b) The current dental manpower resources and the current trends.

c) The facilities available in terms of dental schools and other buildings and equipment.

d) The attitudes, knowledge and practices of the community with regard to dental health.

e) The community’s awareness of its special dental health needs.

f) The organisations, agencies and key people, such as community leaders, and the possible role each might play in any local programmes.

g) The financial resources available for the programme, and those still to be exploited.

h) The past experience in dental health programmes.

i) The existing general and dental health plans and activities.

j) The general situation of the community, the public administration, demographic and socio-economic data - current and projected.

5.1.2 Establishment of priorities

The most common situation is one in which dental needs far exceed the resources available. The allocation of resources to special aspects of the programme, such as educational, preventive or treatment activities is usually made on the basis of certain recognized priorities. It is not possible to state the relative proportion of resources to be allocated to preventive and educational activities since it will vary from one situation to another.
Because of the unusual prevalence of dental disease and the enormous unmet dental needs throughout the world, treatment requirements are inevitably heavy. It is generally agreed however, that preventive and educational activities should receive proper emphasis and that expenditure on treatment should not absorb all the funds allocated for dental health services.

To ensure that an educational programme has the maximum effect it should be developed in such a way that information for the promotion of health is spread to the widest extent possible. This can be done by directing the programme towards those who are in a position to influence others and this implies the parents, the teachers, community leaders, editors and all other persons responsible for the dissemination of information on a mass scale. In programmes where the efforts are addressed directly to those who benefit most from dental health education, pregnant women and schoolchildren represent particularly important groups.

The importance of preventive activities in a dental public health programme has already been emphasised. These should be developed to the fullest extent that available knowledge permits. Where the problem is essentially dental caries, the nature and the use of fluorides should be widely publicised, particularly their use in the form of water fluoridation, but also in alternative forms when suitable water supplies are not available. Where periodontal disease is the prevalent disease, however, the paramount need is for the introduction of broad programmes of oral prophylaxis. In the case of oral cancer, mass screening programmes using oral cytology techniques, should be considered for inclusion in the programme.

In the treatment or curative side of the programme, priorities might be considered from two points of view: what population groups should be preferentially covered and what types of service should be offered. The writer has drawn the following lists showing the order of priorities in 5.1.2.
5.1.2 a) Priorities for Group

1) Children of primary school ages.
2) Children of secondary school ages.
3) Children of pre-school ages.
4) Chronically ill persons, aged persons, physically and handicapped patients.
5) Pregnant women.
6) Other groups.

In classifying children into three groups it is recognised that the age range in respective groups will vary in different countries. When resources are limited, preference would be given to treatment of permanent teeth. In countries where the school entrance age is much over five years an effort should be made to reach children before they enter school if surveys show that the caries rate is high and that first permanent molars suffer an early attack. In all cases an effort should be made to continue treatment regularly once started, and to extend it as late into adolescence as resources permit, since this is an age where attack by caries may reach its peak.

5.1.2 b) Priorities for Type of Treatment Provided

1) Treatment for relief of pain or for control of infection.
2) Treatment needed to support over-all medical treatment.
3) Treatment for local diseases without general repercussions or manifestations.
4) Treatment to correct functional disturbances, such as masticatory deficiency due to loss of teeth.
5) Treatment for cosmetic reasons.
5.1.3 Setting up of Targets and Objectives

On the basis of the information that has been collected on the extent of the problem and of the resources which might be available to cope with it, the planner may now determine, having in mind the recognised priorities, what reasonable targets and objectives might be set up in the plan.

Some objectives may be selected on a long-term basis, such as complete dental treatment coverage of all primary schoolchildren. Other objectives would be selected on a short-term basis, such as treatment of children in the first and second year of primary schools. Short-term objectives are usually considered as those to be attained in periods of one to two years. Long-term objectives may be considered those to be attained in considerably longer periods of time (5-10 yrs).

Objectives can be set on a short-term basis for a dental health education or for a preventive programme in the same way as for treatment programmes. For instance, the institution of a continuing dental health education programme in a large community may be the long-term objective. This could proceed on a gradually expanding basis, as the short-term objectives, measured in terms of a certain number of schools included in the programme each year are attained. The same applies to planning of a country wide water fluoridation programme. Long-term objectives can be reached by having as short-term objectives the adoption of fluoridation by a given number of communities each year.

5.1.4 Consultation and Co-ordination

A primary consideration is to see how well the dental health activities are integrated into the over-all health activities and what resources may be allocated to them. Once a clear idea of the targets and objectives of the plan is obtained, and before preparing a detailed draft, it is important that persons and institutions with an interest in the plan are consulted about it, to ensure maximum goodwill and co-operation.
Consultations might include:

1) Higher health authorities.
2) Health personnel in a subordinate position.
3) Other health agencies of a non-governmental, philanthropic, or any other nature.
4) Leaders and representatives of dental associations and of the health professions.
5) Community leaders and representatives of various community groups.

5.1.5 Draft of the Plan

It is assumed that the consultation in the previous phase provided a good basis on which to estimate resources forthcoming for the dental programme. A plan can then be drafted, which is essentially an anticipation of how the resources will be utilised during a given period. The written plan will clearly specify:

1) The scope of the programme in terms of population coverage and the services to be provided.
2) The personnel and facilities (including buildings, equipment and supplies) required.
3) The estimates of the cost of the capital and recurring expenditures until the plan is carried to its completion.

Needless to say the plan should be realistic. It should anticipate difficulties and delays in recruitment, in construction of clinics, in release of funds and should be comprehensive, including, for instance, provision for adequate training of the personnel who will take part in the programme. When the plan has been drafted, and before it is put into operation, it should be discussed with all those interested persons with whom previous consultations were held.

5.1.6 Periodic Evaluation and Readjustment of the Plan

It would be rare to have a plan which proved an accurate forecast and provided for all necessities and eventualities. To reveal its deficiencies, provisions should be made for periodic evaluations. They will permit corrections or adjustments to be made to the original plan as it develops. In this way not only is the plan maintained up-to-date but experience is accumulated which may lead to more precise planning on future occasions.
5.2 EVALUATION

5.2.1 Relation of Evaluation to Planning and Objectives

Planning is the first step in the organisation of a service. Before a dental health programme can be devised, a careful evaluation of known facts and factors has to be made. Once a plan has been put into operation, an evaluation must be made to ascertain whether it is being executed correctly and to eliminate the defects revealed. For example, it must be ascertained whether the objectives are being achieved, what the extent of the programme’s positive contribution is to the improvement of the dental health of the community, and whether each activity of the service is playing its appropriate part and developing at the planned rate.

Such an evaluation can demonstrate the worth of the service to the community, and there can be no doubt that a good plan and a good evaluation of it after a period can be of great assistance to the justification of financial support.

5.2.2 Need for Baseline Information

The value of a dental health service can only be truly measured by what it has achieved. Therefore information regarding conditions that existed before the service began is essential. This is termed baseline information and relates to such things as the original extent and nature of dental disease, the dental staff that was there to deal with it, the dental facilities available, and the proportion of the population receiving dental care.

Other examples of the need for baseline information are in the planning of educational and preventive programmes where it will be necessary, in the case of educational programmes, to have a statistical assessments of standards or oral hygiene, the habits relating to oral hygiene, and the amount, form and frequency of consumption of cariogenic foods by the community. The data collected will depend on the objectives, particular or general, of a proposed programme.
In the field of prevention, baseline data will be required on the prevalence, incidence and severity of dental disease in the community. This baseline data should be available for each part of the service and also for special studies, research projects, or periodic special surveys which may be undertaken. In the case of special studies, data should be available for both control and experimental groups, so that the effect on any measures can be established. It is essential that all data be collected and dealt with by approved statistical methods.

5.2.3 Continuing Evaluation

Once the plan is in operation and the dental service launched, it is necessary to ensure that information is available to allow for continuing evaluation of the programme. For instance, it is necessary to keep under constant observation the output of the service, the quality that is being maintained, the time spent by the staff, the people served and the cost involved.

Information of this kind, relating essentially to capacity and cost, should be collected in the form of day-to-day service records that at weekly or monthly intervals are made available to the administrator for the purpose of analysis and evaluation. To be of value service records should provide data relating to all aspects and activities of the service; namely, the number and type of services rendered, the number of people attended to, the time expended, the staff employed and costs of equipment, supplies, maintenance and salaries.

5.2.4 Periodic Evaluation

In addition to continuing evaluations which rely on the use of routine service records, it will be desirable to undertake periodic evaluations of various aspects of the dental health programme. This may be done by either the direct or the indirect method. The writer recognises that direct methods are more expensive and that indirect methods may more often have to be employed.
a) Direct methods of evaluation

Direct methods of evaluation are the most valuable for they are made by direct measurement of the effects or results of a course of action. For example, an analysis of service records may show that without change of operational staff and over-all productivity, greater numbers of the population are being provided for in a certain region.

To investigate the possible reason for this using a direct method of evaluation a survey might be undertaken to measure the DMF index of the section of the population concerned and to relate this to baseline information. The assessment of the prevalence of dental caries before and after water supplies have been fluoridated constitutes a direct method of evaluating this preventive measure.

Other examples of direct evaluation are those which are made in terms of the increase in the number of persons in the community receiving dental care. Also, in the case of services that are responsible for conducting training programmes, the number of additional personnel trained since the inception of the programme constitutes a direct evaluation.

Evaluation of treatment can be made from service records. The number of fillings, extractions and other preparations can be related to the number of patients treated; attendances can be ascertained for the total treatment carried out or for any particular type of treatment; the amount of treatment given by each dentist can also be assessed. These are examples of the kind of evaluation that will show whether a treatment service is coping with the needs of the community and if the staff is adequate.
b) Indirect methods of evaluation

The results of a particular action may not always be immediately apparent or easily measured, and it may be necessary to have recourse to means of deducing or approximately estimating what effects may attributed to what cause. It is often useful to adopt both direct and indirect methods when evaluating the results of an activity. For example, a dental health programme would be considered successful if in the community there was a change in behaviour (e.g. a change for the better in its attitude towards early dental treatment), a lowering of the incidence of dental disease, a marked improvement in standard of oral hygiene, or a lower consumption of cariogenic food.

A reduction in the number of extractions and treatments for the relief of acute pain and infection may indicate that a treatment programme is dealing with dental caries and reducing its severity, or an increase in the number of people treated may indicate that the service is increasingly covering the needs of the community.

It will be obvious that there are dangers in indirect methods of attributing effects to particular causes. Certain effects could be attributed to the wrong cause. None the less, such methods may be the only ones which can be used and if other factors affecting results are taken into account, a reasonably satisfactory evaluation can be made, and indeed it is desirable that both direct and indirect methods be used so that evaluation can be as thorough as possible.

5.2.5 Use of Evaluation Data for Re-programming

If a service is to develop and improve and remain efficient, planning must be continuous. Generally a plan has to be reviewed after a certain period. Changes in population size or distribution, in dental staff or in material and financial resources, or an extension of the service may call for a radical change or for an entirely new plan. The revised or new plan will inevitably make use of the evaluations that have been made.
6 TRAINING NEEDS IN DENTAL PUBLIC HEALTH

The great advances in scientific knowledge within the dental profession have produced many new techniques for the mass control or public treatment of oral disease. Concurrently with the expansion in dental science and technology, marked changes have occurred in social philosophy and public attitudes and health care through much of the world. These two phenomena have created a need for a new kind of dental specialist who is trained, not primarily for the provision of personal health service, but for the care of people according to population groups. This new specialist, generally known as a public health dentist, must have additional knowledge and skills which are not provided in the usual undergraduate curriculum and which make post graduate training highly desirable.

In addition, the trend toward more and more government-sponsored public dental health programmes makes it important that all dentists, including those who will be engaged solely or primarily in private practice, be much better prepared to fit into the society of the twentieth century. There is a need, therefore, for increased opportunities and emphasis on dental public health training at both the undergraduate and postgraduate level. (WHO 1965)

6.1 UNDERGRADUATE TRAINING

There is an increasing awareness among dental educators of the needs for additional emphasis on the social aspects of dentistry. There seems to be general agreement that the dental graduate of today must have a sound biological and scientific background, and must be technically proficient and socially responsible.

Educators are experimenting with curricula that will enable their graduates to be more responsive to the needs of society. There is a trend towards grouping courses in what may be called department of "social" or "environmental" or "community" dentistry. In this paper "social" dentistry is meant to include the social aspects of dentistry as distinct from the technical aspects. In the dental
curriculum it may encompass all subjects of direct social import, such as public health, ethics, jurisprudence, history, social and economic relations, psychology and human behaviour, biometrics, and epidemiology. In addition, social dentistry can be interpreted to include certain aspects (i.e., the social aspects) of preventive dentistry, dental economics and practice administration, of gerontology, radiology, hospital relations, chronic disease and rehabilitation and health insurance. All of these subjects, in varying degrees, have social implications - of significance to society as a whole, rather than to the individual patient alone as might be said of strictly technical subjects such as endodontics or crown and bridge prosthesis. In this sense, the dental curriculum may be thought of as comprising two major phases - social dentistry and technical dentistry - which overlap. So obvious is this overlapping that heads of departments of dental public health should actively encourage the heads of other departments to introduce the public health and preventive concept of dental practice in the teaching of their respective subjects.

Dental health administrators have a responsibility for promoting the expansion of these society-oriented courses in their respective countries. In this way, not only will they have a more responsive and responsible dental profession with which to work, but they will have an increased possibility of creating interest among undergraduate students in public health as a career choice.

6.2 POSTGRADUATE TRAINING IN DENTAL PUBLIC HEALTH

Reference has been made earlier in this paper to the need for post graduate training for dentists appointed to higher administrative posts. Training of this kind is available in some of the world's graduate schools of hygiene and public health, although certain school do not admit dentists. The curriculum usually includes a core of courses in public health administration, biometrics, epidemiology and environmental sanitation, and is supplemented with courses for the dentist in areas of special interest, such as nutrition, health education, organisation of health care and a variety of dental public health subjects.
There is a great need for increasing the number of dentists trained in dental public health, but the number of schools available, and their geographic distribution, are at the present time serious limiting factors. In 1990 the World Health Organization has assisted in the development of a regional centre for training in public health dentistry in Thailand, which has been very effective in covering the needs of that Region. A similar development should take place in other WHO regions, where dental public health training is not yet available in schools of public health within the region.

In instances where no school of public health exists, certain dental schools with the potential for offering a comprehensive postgraduate course in dental public health should be encouraged to establish such a curriculum. It should be clearly understood, however, that development of such a curriculum depends upon the competence of the dental school faculty in public health questions.

6.3 SHORT TERM TRAINING
(INSERVICE TRAINING AND REFRESHER COURSES)

Countries with dentists employed in local health centres and other lesser administrative posts should provide short-term training in the essential components of public and preventive dentistry. These courses, which do not lead to an advanced degree, may be offered under the auspices of schools of public health, or schools of dentistry. This system of short-term courses in special subjects was used extensively in the USSR, where the undergraduate curriculum contains a number of courses in general public health and preventive dentistry and advanced degree courses are not deemed necessary.
Modern emphasis upon scientific investigation is so great that man’s ability to accumulate knowledge has so far outpaced his ability to use it. Concurrently, changes in the social, political and economic environment throughout the world have not only produced new and complex needs for health protection but have also created an increasingly vocal demand for more effective methods, particularly more effective public methods, to meet these needs. Public health agencies, faced on the one hand with a mounting backlog of scientific and technical knowledge they do not know how to use and on the other with a host of problems they cannot solve, are devoting increasing time and money to applied research - the discovery of useful way of employing the knowledge at hand. Because such research does indeed make possible a fuller and more immediate translation of research findings into practical programmes, it is an invaluable addition to traditional public health activity and should be encouraged wherever possible.

It is important that research activities reflect as many parameters as possible of the dental public health programmes of the countries in which they are conducted. Research in dental public health practice today, then, should encompass the broad range of subjects having the long-range objective of better dental health for the people of the community, the nation or the world.

7.1 RESEARCH AND THE QUESTION OF PROGRAMME BALANCE

The need for further research in dental public health practice is almost without limit. There is not a country in the world which cannot make a significant contribution to the furtherance of knowledge. Neither of these facts means that research must be a part of every dental health activity, nor that everything undertaken in the name of research is necessary or even advisable. So long as there is pain and disease that can be alleviated through programmes of direct action, so long as there are shortages of manpower and facilities, then priorities
must be assigned. Choices must be made between programmes of service and programmes of research and sometimes the long-term gain must, by necessity, wait until an immediate need has been met. By no means are research and the long-term gain always the better choice.

If research in dental public health practice is to have any real value, it must be recognised not as a replacement or substitute for action programmes, but as a buttress to them - a method of making action more meaningful. In order to undertake research it is therefore necessary to undertake the additional responsibility of weighing the conflicting demands upon an agency's resources and arriving at an intelligent combination of programme activities. Certainly in a newly developed country with great and urgent need for care, with only a handful of professional men, and with the health agency the only possible source of concerted action, choices must be made with extreme care - and with full knowledge of the alternatives available.

7.2 NEEDS IN SPECIFIC AREAS

Among the major areas of research as needing emphasis in current dental public health practice are descriptive epidemiology, the prevention and control of oral disease, manpower development and utilisation, the organisation and provision of preventive and care services with emphasis upon the economics of health care, administrative procedures, and the social and behavioural aspects of oral disease and dental health programmes, with particular emphasis on inter-personal communications.

7.2.1 Descriptive Epidemiology

Major advances have been made in the measurement of oral diseases. Except for malocclusion, indices now exist which serve adequately for the measurement of the major oral diseases and conditions. What is needed now is the implementation of national and international studies of oral conditions, on a
scientific sampling basis, so that scientists in all countries throughout the world will know when, and under what conditions, these diseases are occurring.

The development of an international methodology for measurement of oral disease and the implementation of a planned and systematic programme of global epidemiology should have the highest priority in the dental research programme of the World Health Organization.

7.2.2 Prevention and Control of Disease

The use of fluorides is providing the scientific basis for substantial reduction of dental caries in certain countries. What is needed at this time is an extensive research programme on methods of using this knowledge, both in the human behavioural aspects of programme acceptance and in operational aspects. The fluoridation of salt, currently being tried in Colombia, is an example of developmental research in the area of utilisation of fluorides.

Increased research emphasis is now being placed on methods of preventing periodontal disease. Community-wide programmes of oral prophylaxis and tooth-brushing education have been shown to be effective in controlling certain types of periodontal disease. Public health agencies have a unique opportunity - and an obligation - to conduct research now which will provide some of the answers necessary for the swift implementation of these obviously difficult control procedures.

Though "chairside prevention" offers more economical health protection than remedial techniques, the dental profession as a whole does not practise preventive dentistry to a significant extent, nor does the public seek it. Research is needed to develop new methods of "chairside prevention".
7.2.3 Manpower Development and Utilisation

In the countries where the patterns of dental service have been fixed by both tradition and law, this type of research must seek answers that can be accommodated within an existing and relatively inflexible professional and social matrix. In emerging nations, where conditions are less fixed, where the problems are more critical and the profession still young or even non-existent, research by itself may well determine what the dental tradition will become. In most countries, the research effort will centre upon the dentist - upon making him more productive through the improvement of the dental curriculum, instrumentation and techniques. The research also may be directed to the development of re-definition of duties of dental auxiliaries.

7.2.4 Organisation and Provision of Patient Care

Because of the technological advances of dental science have little practical value until they are translated into better methods of care, there is no more challenging area for applied research than that devoted to the removal of barriers between the dentist and his patient. Whether this research is concerned with the concept of private dental practice, as it exists in the USA, or with dentistry as a national or state health service as it exist in the United Kingdom or in the USSR, we have yet to find a complete answer to the question of how to reduce the enormous gap between the need for care and its actual provision.

The study of organisational systems to provide the best possible care at the lowest possible cost, study of the economics of preventive versus restorative dental services, study of methods that may be adapted from other systems of health care, and study of the occupational health problems of dentists themselves - all of these fields provide substance for research by public health administrators.
7.2.5 Administrative Research

The more rapid advance of technical knowledge in the biological fields, as compared with a country's ability to use that knowledge, has made a new type of research necessary. In many countries the need for new techniques and new inventions is not as pressing as the need for methods of using already available techniques in ways which will assure the best utilisation of resources. Research that would satisfy this demand must lead to the development of administrative or operational systems for the most advantageous allocation and application of skills, facilities and money. This type of research is called administrative or, more accurately, operational research.

For the economically developed countries, this approach may be helpful in developing a more efficient national system of dental public health services: for developing countries, to offer the opportunity of pinpointing those activities through which the greatest need can be met in the shortest time with the most economical use of resources.

7.2.6 Social and Behavioural Research

A better understanding of human activities and behaviour is basic to almost every advance in dental public health programmes. Faced with the lack of public acceptance of a practical method like fluoridation, or with the low utilisation of care services when they have been made easily available, the dentist sometime attributes his failures to an intangible phenomenon called "public indifference" or "public ignorance". Public health agencies need to engage in a variety of research activities, designed first to study the influences that determine attitudes and actions and, second, to find ways of using this new knowledge to encourage people to think and act more constructively where dental health is concerned.
7.3 INTERNATIONAL CO-OPERATION AND COMMUNICATION

There is a very real need to achieve a greater degree of co-operation and communication between nations. The methods and finding of much of today's research have universal application, and there is no need for one country to expend its resources repeating the work of another. Nothing is so frustrating to the research scientist as the "rediscovery" of known facts, and nothing so wasteful as the failure to share knowledge attained.

Every nation, no matter what its problems of money or manpower, can make a major contribution to research if it does not more than amass accurate and thorough operational data. Whether it performs its own analysis of these records or gives other nations access to them, the increase in useful knowledge could be significant.

Pursuit of knowledge could be organised into a more meaningful whole and ultimate research goals attained more quickly and more economically through co-operative research efforts between nations. What is need to make this a reality is the active participation of an international agency such as the World Health Organization. Its headquarters or regional centres could serve as a clearing house for scientific research literature in the dental public health field, so that every country has full access to the work of another. It could also advise nations on the selection of the projects each could best undertake; it could support research projects in crucial areas lacking the necessary resources; it could itself conduct the selected research projects for which its own facilities and resources are peculiarly suited.
8 THE DEVELOPMENT OF DENTAL PUBLIC HEALTH SERVICES IN NEWLY INDEPENDENT COUNTRIES

The intention of this section is to elaborate on some particular aspects of dental health services, discussed in more general terms elsewhere in the paper, from the point of view of the newly independent countries. This last expression is used with a clear understanding of its limitations. There may be countries in this category which have relatively well developed services and to which, therefore, this section would have less relevance. Conversely, countries with a long past history of independent political life may still be in a very early stage of development of their services and may find here useful ideas and concepts to guide them. Fiji may be grouped under this category.

The dental public health problems which face newly independent countries are essentially similar in nature to those of the more developed countries. It is merely that they are greater and that there is more of an element of urgency that calls for special consideration. In other words, as in the rest of the world, dental disease is also prevalent in the newly independent countries, but because of totally insufficient resources to deal with them, the unmet needs are very considerable.

The principles outlined in the preceding sections of this paper are applicable to all countries at whatever stage of development, but in no two cases will it be feasible to apply them to the same extent or in the same manner. For newly independent countries they provide valuable guide-lines to direct thinking and planning, but they are only broad principles and should be adapted and applied with initiative and ingenuity in order to obtain the most effective results possible under the social, political and economic circumstances.

Considerable emphasis has been placed in this paper on the importance of providing for a dental administrator in the central health structure. This is particularly important to newly independent countries, where training of personnel and their utilisation in health services has to be so closely co-ordinated. Long range plans for dental health services should be under the direction of a person
who understands well the health needs of the country and who is well versed in the principles of dental public health administration.

In the absence of previously amassed statistical data on the dental conditions in a country, some form of survey is necessary to assess the needs and resources. Relatively simple surveys using internationally acceptable methods and criteria will suffice for an understanding of the extent and nature of the dental health problem. Over-elaborate surveys which are more suited to the collection of information relating to the complex social systems, service and organisations of the more advanced countries, are to be avoided.

The assessment of dental manpower requirements should be made having in mind the need to provide a reasonable amount of dental care to as much of the population as possible. Countries that are more developed professionally and where dental services are more sophisticated may use more refined methods for measurement of the dental needs and demands of the population. These methods have little application in those newly independent countries with totally inadequate dental manpower resources and where the need to provide some form of dental care is urgent. In certain countries, medical services have developed at a faster rate than dental services and it is relevant to suggest that it should be the endeavour of all health administrations to maintain an appropriate balance between medical and dental personnel.

Recommendations for the development of manpower resources in countries with little or no dental services were made as early as 1959 by the WHO Expert Committee on Auxiliary Dental Personnel. The International Dental Federation, in its 1965 policy statement on "Principles for development of a manpower programme in dentistry", has also made recommendations along similar lines for countries having little or no professionally qualified dental personnel.
There appears, however, to be some reluctance on the part of newly independent countries, even though faced with an urgent need for trained dental personnel, to accept the idea of a dental licentiate or to adopt a less sophisticated curriculum for dental professional education than is usual in developed countries.

In some newly independent countries, unqualified indigenous practitioners may be one of the most important groups providing dental services to the population. As part of the development of necessary manpower resources, and as an interim measure, consideration might be given to organising and utilising the unqualified indigenous practitioners to the best advantage. They should be brought under control and supervision and, where possible, given instruction in order to raise the standard of their services.

For obvious practical reasons dental health services in the newly independent countries can be more readily organised within the framework of existing health services at both central and local levels, i.e., in hospitals, and through maternal and child health and school health services. In most instances those services will need to be provided by governments employing their own personnel.

In order to make the best use of financial resources, material facilities should be adequate, but of a utilitarian nature. Existing buildings should, whenever practicable, be adapted to provide the necessary clinical accommodation. If new buildings are required, these should be economical and simple.

Because of the extent of the unmet dental needs, in many newly independent countries priority must inevitably be given to those suffering from pain and infection. As services develop, the order of priority suggested earlier in this paper should be adhered to. However, in view of the importance accorded to maternal and child health services in developing countries, it is suggested that pregnant women be given a higher priority than the chronically ill and handicapped patients. Programmes for this last group of patients usually appear at a later stage of development of health services.
Dental care programmes for schoolchildren should be established on an incremental basis and with the object of conserving the permanent dentition. In this connection it is preferable to restrict treatment, other than emergency treatment, to manageable groups of children rather than to spread the available resources too thinly.

In organising health education activities in the dental programme of an emerging country, due regard must be given to the degree of literacy, to the religious beliefs, the social and economic state, the availability of dental services and the incidence and nature of the dental diseases. A clear, simple and positive approach should be adopted and programmes such as are employed in the more advanced countries must be adapted to the social environment in which it is intended they should operate.

In view of the general inadequacy of resources and the magnitude of the needs, preventive measures assume great importance. All proven methods should, if possible, be adopted. The addition of fluorides to the water supplies, if they exist, is the most practical, but other possibilities should also be considered.

In countries faced with the immediate problems of relieving pain and discomfort and treating gross infection in large numbers of the population and with few professional staff to do it, it is obviously unrealistic to expect that anything in the nature of major research should be incorporated in a dental health programme. On the other hand, research on diseases or methods of important local significance, and the operation of services, should not be discouraged.

Perhaps the greatest difficulty confronting newly independent countries is the development and implementation of a long-range programme to produce the dental staff required. If, however, a well conceived programme is prepared, it should be possible to obtain a measure of international assistance in order to implement it.
The writer considers that WHO and other sources of international assistance, such as philanthropic foundations, bilateral and multilateral programmes, should pool efforts and stimulate one or more of the newly independent nations to start, with international aid, comprehensive programmes of dental health, where the principles recommended in this section could be put into practice. The programme might take the character of a demonstration to neighbouring countries of a realistic approach to develop dental health services on the basis of clearly stated short-term and long-term objectives.
9 RECOMMENDED STRUCTURAL ORGANISATION AND ESTABLISHMENT OF THE FIJI DENTAL SERVICE

Several political, economic and social changes have occurred in Fiji since 1960. The Civil Service which forms the backbone of the Government has tripled in size. The Ministry of Health employing the biggest number of government workers in the country has undergone several developments in its organisational structure aiming to provide better delivery of health care to the people.

The obvious changes in the structure of the Health Ministry is the sectioning of the various disciplines of health to form a concerted effort to promote, maintain and restore health with the resources provided by the government.

Although divisionalisation had already existed in the compartmentalisation of the health system the degree of autonomy has not been fully recognised and utilised to produce incentives in the different components of the health ministry. The status quo is for medically trained personal to assume leadership roles even though he or she has not the expertise in that particular field. Under these circumstances the medical officers appear to play a co-ordinating role - a part well suited for a health administrator.

Whereas the nursing profession had obtained autonomy over the jurisdiction of the nursing affairs, under its own directorship, the Administration and Financial Section of the Ministry had just recently gained impetus on this ground.

However, other important components of the Health Ministry, like the Environmental Health and the Dental Division, have still to exist under the portfolio of the Preventive and Primary Health Care even though they have the expertise in their own fields and the ability to master their own destiny.

The post of Assistant Director Dental Services was created at the Medical Department Headquarters in the late sixties. During the same period the chief Dental Officer post was located at the Dental Department, C.W.M Hospital.
However, in the early seventies the Assistant Director of Dental Services post was dissolved and the Dental Division was directed by the Chief Dental Officer. The early eighties saw the reversion to the late sixties status. In 1990 the Chief Dental Officer post was traded off for the creation of four Principal Dental Officer posts. The Divisional Dental Services had been managed by Senior Dental Officers for over twenty years.

By comparison a medical officer takes three years of service to be promoted to Senior Medical Officer Grade, while a dental officer takes ten to fifteen years of service to obtain a senior grade even though there is only a year difference in the length of training medical and dental students. The time period is doubled to obtaining the principal posts for both categories.

The writer believes this marked disparity is the result of insufficient posts created for the dental division without due consideration taken on the magnitude of dental health problems affecting the entire population and the morbidity and population growth rate the country is experiencing. The inefficiency has undermined the production of suitably qualified dental personal and maintaining them in government services, to a stage where auxiliary dental personal are being utilised to provide inadequate dental services.

The condition with the dental auxiliaries is even more pathetic. Since the graduation of the first batch of dental therapist in 1973, there had only been one post of Supervising Dental Therapist created since 1990. Recently (1992), eight Senior Dental Therapist posts have been created in the Ministry. There are only two supervising posts for the Dental Technicians at the present time, while there is neither the supervising and responsible position offered to the Dental Assistants nor incentives created for them to undergo further training to become Dental Therapist or Dental Technicians. Instead, this latter class of dental auxiliary is grouped under one title as Junior Dental Assistant and they can only be differentiated by the amount of salary they are remunerated for depicting their years of service.
From the brief outline presented one can deduce that although oral health is equally important to other aspects of general health the ways and means of achieving a better oral health system has not been fully developed towards this end.

The writer believes a means of achieving a comprehensive dental health service is to develop and adopt an organisational structure that encompasses a wider area of responsibility which ensures a better dental health delivery system, while, at the same time, ensuring a dynamic working environment for its dental health workers.

The recommended organisational structure described in the following section is aimed at achieving this end but can be subjected to change depending on the economy and other relevant factors that may arise from time to time.

9.1 PERCEIVED ORGANISATION STRUCTURE

While the Permanent Secretary for Health’s role should be seen as an administrator, co-ordinator, adviser, monitor and evaluator of the entire health system with other powers vested on it the writer believes that administration and direction of the implementation of the health policies be laid squarely on the heads of each component of health. In this sense they should assume immediate administration and responsibility of all personnel under their sections and at the same time providing consultative and advisory role to the government and the Permanent Secretary at the national level.

Recognising and implementing this aforementioned line of control would eliminate the existing two-way method where it is advisory to one while administered by another.

The existing organisational structure has limited the necessary developments in other areas of health with funding being centrally controlled without direct access
by the unit heads, thus leaving very little leeway to the development in other areas of health even though there is evidently the need of improvement of service in those areas.

Having weighed the implications of the existing structure, the financial constraints affecting the implementation of a comprehensive public dental health service, and the affect they bear on the dental personnel the writer wishes to recommend an organisational structure, which he considers should be long lasting and effective in service delivery (Table 6).

The writer recommends the creation of Director of Dental Services post who should assume direct administrative control of all dental personnel and provide consultative and advisory role to the government and permanent Secretary for Health on dental health matters. The provision of the delegated authority with reasonable degree of autonomy should be carried out in recognition of the dentist’s specialty and knowledge of dental problems.

At the national level two assistant director posts should be created to assist and directly responsible to the Director of Dental Services. The Assistant Director Preventive and Primary Oral Health Services is to be directly responsible for the promotion and implementation of preventive programmes in the country. Under its wing should be incorporated an Oral Health Education Unit under the charge of the Oral Health Education Officer, who should be responsible for the planning and co-ordination of oral health education activities in the country.
Table 6  Recommended Organisation Structure for Dental Officers

MINISTER FOR HEALTH

PERMANENT SECRETARY FOR HEALTH

DIRECTOR OF DENTAL SERVICES

ASSISTANT DIRECTOR DENTAL SERVICES - PREVENTIVE & PRIMARY ORAL HEALTH SERVICES.

ASSISTANT DIRECTORS DENTAL SERVICES - CURATIVE DENTAL SERVICES.

CHIEF DENTAL OFFICER P & P O H S

CHIEF DENTAL OFFICER C D S

SPECIALISTS

PRINCIPAL DENTAL OFFICER

PRINCIPAL DENTAL OFFICER

SENIOR DENTAL OFFICER

SENIOR DENTAL OFFICER

DENTAL OFFICER

DENTAL OFFICER
The Assistant Director Dental Curative Services’ responsibility lies in the development of treatment and restorative dental services. The creation of the post should be seen in line with the development of the existing divisional dental centres to become dental hospitals where appropriate specialised dentistry is to be carried out to a level comparable to other countries but adequate for the country’s needs. The two assistant directors should assist the Director of Dental Services in the evaluation and formulation of the national dental health policy which should form the guideline as to the direction the dental division is to progress in its preventive and curative programme.

At the national level two assistant director posts should be created to assist and directly responsible to the Director of Dental Services. The Assistant Director Preventive and Primary Oral Health Services is to be directly responsible for the promotion and implementation of preventive programmes in the country. Under its wing should be incorporated an Oral Health Education Unit under the charge of the Oral Health Education Officer, who should be responsible for the planning and co-ordination of oral health education activities in the country.

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At the divisional level the writer recommends the creation of two Chief Dental Officer posts - one to be responsible for Preventive and Primary Oral Health Care in the division and the other to co-ordinate and be responsible for the curative dental services provided for at the dental hospitals.
Oral Health Educator posts are to be created at the Divisional level for the coordination of oral health education activities in the division having direct access to the Oral Health Education Officer at the national level but administratively under the Chief Dental Officer Preventive and Primary Oral Health Services. The creation of this post is so necessary in view of the importance of health education in the promotion of prevention to attaining a better health standard. Officers holding this responsibility are to be on Principal Dental Officer’s level.

Principal Dental Officer post is recommended for at the sub-divisional level. Officers in this position should be responsible for the running of the sub-divisional dental clinics, oversee the provision of dental services and implementation of preventive dental health programmes in the division ensuring that efficiency is maintained. A Principal Dental Officer should assume immediate responsibility of administration of the dental health personnel at the sub-division level. Principal Dental Officers at the sub-divisional level are to be responsible to Chief Dental Officer Preventive and Primary Oral Health Services.

Senior Dental Officer posts are to be accorded to dental officers at least after three years of continuous government service depending on their performances and capabilities so that the required establishment is maintained in the service.

Dental Officers are to serve for at least three years in the area dental clinics after graduation in order to familiarise themselves with types of dental problems encountered at the community level and the type of services required, prior to the consideration of the officer’s aptitude towards prevention or curative services.

It should be seen however, that the development of preventive methods and extension of dental service to the rural and remote areas should take precedence over the development of curative services to accommodate specialisation.
However, the improvement of facilities at the Suva Dental Department should be regarded as of priority importance in view of its dual role as a referral centre and more importantly as a training institution for dental personnel.

The writer therefore, recommends that the present dental outpatient system in the Dental Centres be reviewed and a more systematic approach developed with necessary facilities provided (Table 7).

Table 7  Recommended Dental Out-patient System

While the Chief Dental Officer- Curative Dental Services play an administrative, advisory, co-ordinating and monitoring role each section is to be under the charge of departmental heads who should be specialist in their own fields. Provisions for principal and senior posts are recommended for each section depending on the qualifications and expertise of each officer.

The modification to the dental setting would mean the development of centralised dental record system which should be manned exclusively by recorders under the Administration and Finance Section.
Each department, however, is to be provided with a receptionist whose main function shall be the receiving and recording of patients and the receipt and paying in of revenues collected.

A dental drug store should be provided in each divisional dental hospital and to come under the charge of a storeman, whose main responsibility is to see that the divisional hospital and the dental clinic in the division are adequately provided with the essential dental drugs. A section should be formed under the Assistant Director Dental Services Curative whole responsibilities should include the indenting of dental equipment and instruments, the acquiring of necessary and up-to-date dental drugs from overseas manufacturers, and the supply of these necessities to the divisional dental hospitals and clinics.

Area dental clinics should have direct access to the proposed section when ordering their dental supplies depending on their easy access to the central source of supply.

Other relevant stores are to be acquired through the existing system by the storemen.

Regarding the Dental Auxiliaries the writer recommends the following set up to be created for each category.

The Dental Therapists are to be trained exclusively for the school dental service and in any other areas of prevention assigned under their responsibilities. A post of Supervising Dental Therapist is recommended at the division level whose main functions shall be the co-ordination and monitoring dental therapist work in the division and providing feed back to the Chief Dental Officer-Preventive on matters pertaining to the school dental service.

Senior Dental Therapist posts are to be created at sub-divisional level who should take charge of the school dental service under their respective sub-divisions.
Dental Therapists are to come under the supervision and administration of Dental Officers in the areas they are required to serve (Table 8).

The writer recommends the creation of Supervising Dental Technician posts at the three dental hospitals. Two senior posts are to be created at each hospital - one to be responsible for prosthodontics and the other to take care of the orthodontic laboratory section. Dental Technicians are to be immediately responsible to the departmental head they are assigned to but should administratively come under the CDO- Curative Services (Table 9).
Table 9  Organisation Set-up for Dental Technicians

CDO - CURATIVE SERVICES

SUPERVISING DENTAL TECHNICIAN

SENIOR DENTAL TECHNICIAN
(PROSTHETICS)

SENIOR DENTAL TECHNICIAN
(ORTHODONTICS)

DENTAL TECHNICIAN

DENTAL TECHNICIAN

While it may be necessary to develop and provide prosthodontics services at the sub-divisional dental clinics dental technicians assigned to be in-charge of the laboratory work are to be given seniority posts. In this setting they are administratively under the Principal Dental Officers.

The writer strongly supports the recommendation put forward by GN Davies (1990) for the reopening of the Dental Hygienist course programme. Once implemented incentives by way of creating supervisory and senior posts be created. At the dental hospital setting Supervising Dental Hygienists are to come under the Head of Periodontics while at the Preventive Section the post should be located under the CDO Preventive Services. In this capacity the Supervising Dental Hygienist plays a co-ordinating, monitoring and advisory role for hygienists employed in the divisional school dental scheme and clinics. Dental hygienists employed at sub-divisional and area levels are to come under the administration of dental officers in charge of the dental unit (Table 10).
Table 10  Organisational Set-up for Dental Hygienists

**HOSPITAL SETTING**

- CDO - CURATIVE
- HEAD OF PERIODONTICS
- SUPERVISING DENTAL HYGIENIST
- SENIOR DENTAL HYGIENIST
- DENTAL HYGIENIST

**PREVENTIVE SECTION**

- CDO - PREVENTIVE
- SUPERVISING DENTAL HYGIENIST
- SENIOR DENTAL HYGIENIST
- DENTAL HYGIENIST

Similar arrangements are recommended for the dental assistants. However, the writer proposes a change of the title for this dental auxiliary from the present "Junior" Dental Assistant to a more appropriate "Dental Chairside Assistants".

In view of the need for the services of dental chairside assistants in practically all the dental settings two supervisory posts at divisional level are deemed necessary.
The Supervising Dental Chairside Assistant in the Preventive Section is to come directly under the CDO-Preventive while a similar post be created under the CDO-Curative Services (Table 11).

**Table 11  Organisation Set-up for Dental Chairside Assistants**

<table>
<thead>
<tr>
<th>CDO (PREVENTIVE OR CURATIVE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SUPERVISING DENTAL CHAIRSIDE ASSISTANT</td>
</tr>
<tr>
<td>SENIOR DENTAL CHAIRSIDE ASSISTANT</td>
</tr>
<tr>
<td>DENTAL CHAIRSIDE ASSISTANT</td>
</tr>
</tbody>
</table>

Having the dental organisation structure in its perceived form shall not be fully functional without the important element of the Administration and Finance Department. This important section is to be incorporated within the system from the Assistant Director level to the Area level in the Preventive Section, and to the divisional level for the Curative Services.

An Assistant Director of Administration and Finance is therefore recommended at the national level who should be directly responsible to the Director of Administration and Finance but administratively come under the Director of Dental Services. This section, at the different levels of the organisation structure, should oversee leaves and relieving of dental personnel, effect posting of personnel and control transport and support facilities provided at that level of service delivery. Finance should come under the control of this unit. Receiving and recording of dental patients, receipt of dental fees, updating of dental records and maintaining of the dental drug stores should be part of its daily work procedures (Table 12).
Table 12  Organisation Structure for Administration and Finance Section

PERMANENT SECRETARY FOR HEALTH

DIRECTOR OF
DENTAL SERVICES  DIRECTOR OF ADMINISTRATION
& FINANCE

ASSISTANT DIRECTOR OF
ADMINISTRATION & FINANCE

ADMINISTRATION OFFICER

CHIEF EXECUTIVE OFFICER

CLERICAL OFFICERS

Receptionist  Transport
Officer  Personnel
Officer  Recorders  Storeman  Accounting
Section

The perceived organisational structure of the Fiji Dental Service should in its
proposed form improve dental services delivery, develop preventive and curative
services, to suit the needs of the people and comparable to other developed
countries and produce incentives within its workforce (Table 13).
Table 13  Perceived Organisation Structure for the Fiji Dental Service
9.1.1 Functions and Qualifications

For an efficient public health service the members of the staff should be well versed with direction of its undertakings as provided in policy statement. It is equally important that they should realise their specific duties and responsibilities. Educational qualifications for those holding responsible positions are highly desirable as a prerequisite for appointment.

The writer wishes to put forward the functions and necessary qualifications for those deemed as appointees for higher post in public dental health service. Salary scales for each category of personnel are to be similar to that as laid down by the Fiji Public Service Commission regarding the respective posts and their responsibilities.

Director of Dental Services (DDS)

The DDS is responsible for the planning, development, review and implementation of the national dental health programme. He advises Government and the Permanent Secretary for Health on dental health matters. He provides support and advice to Assistant Director Dental Services - Preventive and Curative Service and the divisional staff.

Functions

1. Adviser to Government and PSH on national dental health.
2. Co-ordinates the national dental service programme.
3. Liaises with the Ministry of Education, National Food and Nutrition Committee and Health Education Units concerning dental health and its promotion.
4. Co-ordinates post graduate dental training, liaises with educational institutions on under-graduate dental training courses for dentists dental therapists, dental assistants, dental hygienists and dental technicians.
5. Member of Dental Registration Board.
6. Prepares the dental services programmes budget and monitors. (a) the usage of the approved budget throughout the year. (b) the quality and quantity of dental services provided by curative and preventive dental services.
7. Review and update manuals of procedure in respect of dental services for implementation of curative and preventive services to ensure uniform application of policies and procedures.

8. Liaises with other HQ units and curative and preventive assistant director concerning manpower and human resources development, programme monitoring and planning, research and facilities development related services.

**Qualifications**

A masters degree in dentistry with a diploma in administration is desirable. Appointee should have at least a minimum of fifteen years service in government dental service, having at least served as a Chief Dental Officer at divisional level.

**Assistant Director Dental Services - Preventive and Primary Oral Health Services (ADDS - P & POHS)**

Appointee is responsible for planning, development, review and implementation of dental health preventive programme. Advises DDS on preventive dental health. Liaises with Assistant Director Dental Services Curative on preventive dental health needs as produced from annual treatment figures. Provides support and advice to dental personnel at Divisional, Sub-divisional and, area levels.

**Functions**

1. Advises DDS on national preventive dental health.
2. Co-ordinates the national health preventive programme.
4. Co-ordinates post graduate and under-graduate training for dental prevention personnel.
5. Reviews implementation of preventive measures in all divisions.
6. Controls posting of preventive dental personnel from division to division.
7. May act as DDS on the latter’s absence and upon his/her recommendation.

**Qualifications**

A degree in dentistry with a post-graduate diploma in public health dentistry is a prerequisite. The officer should have some administrative experience having served as CDO Preventive at Divisional level or as Principal Dental Officer in a sub-division.
Assistant Director Dental Services - Curative Services (Hospital Services) (ADDS-CS & HS).

Appointee is responsible for planning, development, review and implementation of dental curative services. Advises DDS on dental curative services. Provides feedback to ADDS Preventive in curative services undertaken in the divisions.

**Functions**

1. Advises DDS on National Curative Services
2. Co-ordinates dental curative services.
3. Liaises with the manager Pharmaceutical and Medical Supplies Division concerning identifying, purchasing and distribution of dental supplies and the specification and purchasing and installation of dental equipment.
4. Co-ordinates post-graduate and under-graduate training of dental curative personnel.
5. Review implementation of curative measures in all divisions.
6. Controls posting of dental personnel from division to division.
7. May act as DDS a the latter's absence and upon his/her recommendation.

**Qualifications**

A degree in dentistry and hospital administration is essential. Appointee should have at least served as Chief Dental Officer - Curative Services.

Assistant Director - Administration & Finance (AD-FA)

Responsible for the development, planning, review and implementation of national service and administration systems and programmes within the framework of instructions issued by the Ministry of Finance and the Public Service Commission. Provides support and advice to DDS and Administrative Officer in the Divisions.
Functions (AD-FA)

1. Provides special administration services for all divisions at Dental Services Headquarters and in particular supervises and directs the following service units:-
   a) financial services
   b) personnel services
   c) registry and record services
   d) computer services
   e) central/overseas purchases.

2. Provides support and advice to Director of Dental Services and Administration Officers (AO) of divisions.

3. Co-ordinates the preparation of the Dental Division Annual financial statements and budget forecast and reviews actual operating results of revenue and expenditure against the approved Dental Division Budget Allocations.

4. Authorises expenditure and ensures adequate financial and accounting records are maintained in respect of the assets and liabilities of the Dental Division.

5. Reviews and updates, as required manuals of procedures and inspection programmes in respect of financial and administration procedures at Dental Division Headquarters and at Divisional Dental Services to ensure uniform application of policies and procedure throughout the Dental Division.

6. Liaises with Director Administration and Finances, Dental Division Headquarters and Divisional Dental Services units concerning manpower and human resources development, programme monitoring and planning, research and facilities development and administration services.

Qualifications

A degree in Administration and Accounting is desirable. Appointee should have at least 10 years experience in administration and accounting.
Chief Dental Officer - Preventive Services (CDO - P & POHS).

He is responsible for planning, development, review and implementation of dental health preventive programme in the division. Provides feedback to ADDS on preventive dental health needs in the division. Provides support and advice to sub-divisional and area levels. Controls preventive personnel in the division.

Function
1. Advises ADDS - P & POHS on divisional dental health.
2. Co-ordinates divisional health preventive programme.
3. Liaises with Divisional Education Officer and Divisional Medical Officer concerning dental health and its promotion.
4. Reviews dental manpower needs in the division.
5. Member of the Divisional Development Committee.
6. Monitors the use of budget relative to the implementation of preventive programme in the division.
7. Liaises with ADDS - Preventive in the need for inservice training for preventive dental personnel.
8. Controls posting of dental personnel at division level.
9. Submits monthly returns to ADDS - Preventive.

Qualifications
A degree in dentistry with diploma in public health dentistry is most desirable. Must possess administrative qualities. He/she should have at least ten years experience in Government Service. Should have served as Principal Dental Officer or as Senior Dental Officer in an area level.
Chief Dental Officer - Curative Services (CDO - CS or HS)

He is responsible for planning, development review and implementation of dental curative services at the divisional dental hospitals. Provides feedback to ADDS - Curative on needs in the division. Provides support and advice to all unit heads and all auxiliary personnel in the dental hospital.

Functions
1. Advises ADDS- Curative on divisional curative dental needs.
2. Co-ordinates units Curative Programme.
3. Review Curative dental manpower requirements in the dental hospital.
4. Member of Divisional Development Committee.
5. Monitors the use of budget relative to the Curative Services provided.
6. Liaises with ADDS -Curative and heads of units for post graduate service training for Curative personnel.
7. Controls transferring of dental officers and dental assistants in different units within the dental hospital.
8. Submits monthly returns to ADDS Curative.

Qualifications
A degree in dentistry with post graduate diploma in Hospital Administration is a prerequisite for the post.

Heads of Department (Specialists)
These are specialists in their own fields. They should have direct access to ADDS -Curative but are administratively under the CDO - Curative Services.

Functions
1. Advise CDO Curative on needs of their own specialties.
2. Assess dental manpower in their own field.
3. Advise CDO Curative on equipment requirement.
4. Arrange workshops and in-service training for dental officers in hospital and preventive services.
5. Assess the need for further training for officers under their specialty.
6. Submit monthly returns to CDO -Curative Services.

Qualifications
A masters degree in field of specialty is required.
Administration Officer (AO)

Responsible for the development, planning, service and implementation of finance and administration system at the divisional level. Provides support and advice to CDDS Preventive and Curative, Executive Officer and Finance units in the division and sub-division.

Functions
1. Provide, Administration Services to all personnel at the divisional level.
2. Oversee the following administrative service unit:-
   a) financial service
   b) personnel service
   c) registry and records
   d) computer services
   e) support services, eg vehicles and unestablished staff.
3. Co-ordinates the preparation of the divisional annual financial estimates and budget forecasts and reviews actual operating results of revenue and expenditure against the approved divisional budget allocations.
4. Authorises divisional expenditures and ensures financial and accounting records are maintained in respect of the assets and liabilities of the division.
5. Periodically carries out inspection of Financial and Administration procedures at divisional, sub-divisional and area level of dental service to ensure uniform application of policies and procedures throughout the division.
6. Liaises with their Headquarters units, divisional and subdivisional heads concerning manpower and human resources development programme monitoring and planning, research and facilities development related to finance and administration services.
7. Controls provision of housing to all personnel in the division.

Qualifications
A degree in accounting and administration is essential.
Oral Health Education Officer (OHEO)

The office of the above personnel is to be situated at the Dental Division Headquarters and to come under the Assistant Director Preventive Dental Services. His/her role is to co-ordinate national oral health educational activities, oversee the production of audiovisual aids, charts, pamphlets and the distribution of the same to the divisions.

Qualification
A degree in dentistry with a post graduate diploma or degree in public health dentistry majoring in oral health educations. He/she should have at least served ten years in government service. The post should be equivalent to the chief dental officer post.

Principal Dental Officer (PDO)

Functions
He/she should have at least served ten years in the government dental service. He/she will be responsible for the day to day running of the Dental Clinic under his/her charge and the administration of personnel employed him/her.

Holders of this post are to be directly responsible to their immediate Supervisor - Assistant Director Dental Services, Chief Dental Officer or a Specialist. They could be given acting appointments on those posts on the holder’s advice.

Qualifications
A degree in dentistry and a diploma holder with six years experience in the government Dental Service.
Senior Dental Officer (SDO)

Functions
Officers in this category are responsible to the senior officer under which they are assigned. They should be responsible to the daily running and administration of the clinics and personnel employed under them.

Qualifications
A degree in dentistry or a diploma holder with three years experience in the government service.

Supervising Posts (Dental Auxiliaries)

Functions
They are responsible for the co-ordinating and supervision of work of their respective disciplines. They are to be responsible to their Dental Officer.

Qualifications
Certificate or Diploma holders of their respective discipline with ten years experience in their fields of work. They should possess administrative qualities.

Senior Dental Auxiliary Posts

Functions
Responsible to the coordination and supervision of dental auxiliaries in their working areas. Delegates duties and overseas general running of dental auxiliary work. Responsible to supervising officer and dental officer in his/her area of work.

Qualifications
Certificate or Diploma holders in their respective discipline with at least five years working experience is required.
9.2 PERCEIVED DENTAL ESTABLISHMENT

From the perceived organisation structure it could therefore be seen that a vast improvement in the dental personnel establishment is required. The perceived development is seen as necessary requirement in the improvement of the dental workforce, but more so to the development of dentistry to meeting the needs and serving the demands of the people in this modern age of technological science.

The dental manpower establishment (Table 14) arrived at after due consideration of the following factors:

1) The steady rise in population which is anticipated to reach one million in the next ten years should the present growth rate continue to be maintained. In this regard a workable dentist/population ration of 1:4,0000 should be achieved.

2) The oral health status and the dental disease pattern affecting the entire population. While dental diseases are often associated with the socio-economic status of the people its occurrences however cover the entire section of the community from a child to the elderly.

3) The geographical implication which may affect the utilisation of dental service or the provision of services to the people. Dental clinics are needed to be opened up in rural areas and be centrally located in islands to serve the needs of people living in nearby islands.

4) The economic growth in Fiji should be achieving in twenty years time to support a comprehensive dental service delivery.
<table>
<thead>
<tr>
<th>Post Title</th>
<th>Perceived Establishment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Director of Dental Services</td>
<td>1</td>
</tr>
<tr>
<td>2. Assistant Director of Dental Services</td>
<td>2</td>
</tr>
<tr>
<td>3. Chief Dental Officer</td>
<td>4</td>
</tr>
<tr>
<td>4. Dental Specialists</td>
<td>12</td>
</tr>
<tr>
<td>5. Principal Dental Officer</td>
<td>40</td>
</tr>
<tr>
<td>6. Senior Dental Officers</td>
<td>80</td>
</tr>
<tr>
<td>7. Dental Officers</td>
<td>100</td>
</tr>
<tr>
<td>8. Supervising Dental Therapists</td>
<td>3</td>
</tr>
<tr>
<td>9. Senior Dental Therapists</td>
<td>40</td>
</tr>
<tr>
<td>10. Dental Therapists</td>
<td>50</td>
</tr>
<tr>
<td>11. Supervising Dental Technicians</td>
<td>3</td>
</tr>
<tr>
<td>12. Senior Dental Technicians</td>
<td>8</td>
</tr>
<tr>
<td>13. Dental Technicians</td>
<td>16</td>
</tr>
<tr>
<td>14. Supervising Dental Hygienist</td>
<td>6</td>
</tr>
<tr>
<td>15. Senior Dental Hygienists</td>
<td>20</td>
</tr>
<tr>
<td>16. Dental Hygienists</td>
<td>40</td>
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<tr>
<td>17. Supervising Dental Assistant</td>
<td>6</td>
</tr>
<tr>
<td>18. Senior Dental Assistant</td>
<td>40</td>
</tr>
<tr>
<td>19. Dental Assistant</td>
<td>200</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>671</strong></td>
</tr>
</tbody>
</table>
9.3 IMPLEMENTATION STRATEGY

To achieve an autonomous dental division within the Ministry of Health the writer believes that the following contributing factors, as already discussed in Chapter 4, need to be addressed and pursued, within a time frame of ten to twenty years, to achieve the projected goals for an effective and efficient dental organisational structure:

**Improvement and increase in dental manpower training**

Training of dental students should be reintroduced with the view of awarding Bachelor of Dental Surgery degree to graduates. However, the writer suggests that dental training should be fully incorporated as a faculty in the University of the South Pacific with the Ministry of Health providing the facilities for training at the existing Dental Department, C.W.M. Hospital. By this move Fiji should regain its former status as the Regional Training Centre for dental students in the South Pacific. Post-graduate dental training should continue to be undertaken at overseas dental schools to provide the necessary training in specialised fields.

The dental division has to closely monitor dental manpower training requirements to attain the required strength relative to the country's needs and the growing population.

The writer recommends the establishment of a School of Dental Therapy, to be maintained by the Ministry of Health, to meet the local needs in Fiji. Facilities for training are to be provided within the set-up in order to orientate the would-be therapists that their area of responsibility is outside of the dental clinic setting but in the school dental service.

Training for the remaining three auxiliary dental personnel should continue to be run by the Ministry of Health.
Improvement to dental facilities

It is highly desirable to improve the facilities and set-up at the three main divisional centres to accommodate specialisation thus improving dental service delivery.

Provision for separate legislation

The writer recommends that separate legislation and other statutory powers be made specifically for public dental health services. A separate Dental Act be drawn up for dental personnel to ensure proper registration is kept and job specification outlined for each category of dental personnel.

Provisions be made in the registration of dental practitioners where private practitioner should have at least a degree in dentistry to be allowed to practice outside of government service. Experience alone is insufficient to the under taking of a private practice but with wide knowledge of dentistry in line with modern developments in dental science would prove beneficial to the patients generally.

Annual budget allocation for dental services

It would be highly desirable that the dental division is provided an allocation from the Ministry’s Annual Budget. The provision for annual dental estimates would help in meeting the running costs, developing and expanding dental services more efficiently.

A wider coverage for the National Dental Health Policy

While the present national dental health policy laid emphasis on the provision of dental care to children up to the age of fifteen years the writer believes that equitable distribution of dental care should be the set goals for public dental health services. The recommendation should be seen in the context of the Private Health Care Approach which aims at providing the whole population with essential health care. (World Health Organisation, Geneva, 1978).
Development of an Institute of Dental Research.
Dental Research should be incorporated into the Faculty of Dentistry once the latter has been fully merged into the University of the South Pacific.

Provision for decentralisation
The writer noted with concern the proposals put forward by the Ministry of Health to decentralise the health system. In his view the time is not yet right for its successful implementation for the following reasons:-

a) The general shortage of manpower in relatively all the different components of the health system.

b) The insufficient facilities available to produce an efficient service.

c) The present growth in the national economy to support the provision of decentralisation.

d) The unavailability of health insurance schemes that should meet the payment of consultation and treatment provided to patients.

The writer believes the initial step to be taken is to decentralise the services provided within the Ministry of Health prior to decentralisation of the system.

The writer wished to put forward, in sequence, steps that could be followed to achieving the desired goal:

Step 1
Within the coming decade (1993-2002) the Ministry of Health’s attention should be focussed into improving the dental manpower strength as previously discussed.

The present dental therapists should be given the option, within a five year period (1993 -1998), for further training to becoming Dental Officers.

Graduates from this group should be awarded the Diploma in Dental Surgery.

The new intakes for dental therapy courses are then trained primarily to care for the school dental service.
Similarly, the present Junior Dental Assistants are to be given two options, either to be trained as dental hygienists or as dental therapist (Davies 1990).

New intakes of dental hygienists and dental chairside assistants are then trained to achieving the desired strength at that point in time.

During the same period, dental officers are to be given opportunities for further post graduate studies at overseas dental schools in necessary specialised fields.

Similar arrangements are to be carried out for dental technicians to provide them with the knowledge of recent advances in dental technology.

**Step 2**

With the increase in dental manpower strength should come the extension services by opening dental clinics in remote areas.

Improvements of facilities in the divisional centres, as previously discussed, are also to be carried out.

**Step 3**

Within the next five years (1993-1998) the writer recommends the creation of two new posts in the dental division.

i) An Assistant Director of Dental Services Curative under the Director of Hospital Services, who should be responsible in co-ordinating dental curative services carried out at the dental centres.

ii) Two Principal Dental Officers - Preventive posts in the Western and Northern Divisions to co-ordinate preventive services in each division. The existing Principal Dental Officer posts presently in existence at the dental centres should then be titled as Principal Dental Officer - Curative Services.

In the writer’s view should all the necessary developments fall into perspective the attainment of an autonomous organisational structure for the dental division could be in operation, at the latest, by the year 2015.
10 DISCUSSION AND CONCLUSIONS

The provision of an effective and efficient dental public health service through the development of an effective organisational structure should be seen in the context of "necessary development" in a developing country like Fiji.

In developing the proposed organisational structure the writer has taken into account and consideration that organisation has two concepts: a concept of personal objectives, and a concept of the organisation's objectives. The effectiveness of the organisational structure requires an integration of all the individual concepts of the organisations objectives into a joint overall concept of the organisation's objectives. It should be seen therefore, that the overall organisational objective provides direction for the activities of every member of the dental profession.

It is an undoubted fact that core element of an organisation is the person, in an organisational structure the creation of necessary positions to monitor effectiveness. Working elements consist of non-human resources and the abilities of persons. Human abilities include the ability to do, the ability to influence others, and the ability to use concepts of creating, planning, organising, motivating communicating, and controlling. When all the resources are well employed or managed, an effective dental public health service exists, if its objectives are being effectively accomplished.

The proposed organisational structure is designed to achieve organisational goals and worker fulfilment as complimentary objectives, based on the premise that they are mutually dependent.

Early writers on organisation design, collectively known as the classical writers, attempted to advise on efficient organisation by concentrating on the mechanics of structure. Later writers found that efficiency and productivity is also dependent on human attitudes and systems of work which promote motivation. More
recently, it has been argued that organisations should also be designed to provide personal fulfilment for the individual, as a complimentary requirement to achieving tangible organisational objectives.

The proposed dental organisational structure has been designed for the development of preventive and curative aspects of dentistry. It should be appreciated, however, that the development of preventive and primary oral health care services should take precedence over the development of specialised curative dentistry. Extension of essential dental services to the remote areas and the implementation of communal prevention programmes such as the fluoridation of existing water supply schemes in urban centres should be seriously taken into consideration.

Due consideration should be taken on five principles underlying the definition of primary health care which are:

1. equitable distribution,
2. community involvement,
3. focus on prevention,
4. appropriate technology, and
5. multisectinal approach.

The global goal for oral health set for the year 2000 shall not be achieved by the present dental manpower strength. The target should be set at year 2010.

Determining the oral health status and the pattern of distribution of oral diseases, which are important elements in planning oral health manpower needs and necessary for evaluating preventive programmes saw the necessity of carrying out oral epidemiological surveys every ten years. Clinical data alone does not provide the true picture of the oral health status of the population. While the provision of better health service will subsequently result in prolonging life, focus should now be drawn on the dental treatment for the elderly. This requires the formulation of a national dental health policy with wider perspective.
The writer recognises that the organisation of dental public health services is influenced greatly by cultural factors and by the social, economic and political philosophy of the country. However, a specific set of principles can be applied to almost all organisational system for the provision of dental health services, no matter what the cultural or social pattern of the country involved.

*To conclude, the writer wishes to emphasise certain points:*

1. The first and most important step in the organisation of an effective dental health programme is the appointment of a dentist to a full-time position, either advising or administrative, upon whom responsibility for developing the programme can be fixed.

2. It is necessary for an administrator of a modern health programme to have advanced, post-graduate training in public health administration.

3. There is a great need for additional public health and specialised training in dentistry which should be encouraged at overseas dental schools.

4. Public dental health programmes usually include educational, preventive and treatment services. Because of the universal prevalence of dental diseases and the enormous unmet dental needs, preventive services be given a high priority in such programmes and that the application of proven methods of prevention be encouraged.

5. The writer draws the attention to the necessity of having a formal and systematic approach to the planning and evaluation of public dental health programmes.

6. Manpower resources, both professional and auxiliary, are in short supply, and should be given primary attention to efforts designed to improve the manpower supply.

7. Re-establish Fiji as the Regional Training Centre for dentists in the South Pacific, and establish a regional centre for development of research activities and for the compilation of research information.

REFERENCES

ALLEN D, HUGHES JA (1983)
Management for health service administration.
London: Pitman.

BARMES DE (1983)
Programme for oral health and future strategies.
Report to thirty-six World Health Assembly, in Oral Health.

BARNARD CI (1958)
The functions of the executive.
Boston: Harvard University Press. p75.

BYRT WJ (1971)
People and organisations.

CARZO R Jr, YANOUZAS JN (1967)
City: Richard D Irwin Inc. p240.

DAVIES GN (1990)
The training of oral health personnel.

DUNPHY D (1981)
Organisational change by choice.

FIJI TODAY (1990)
Fiji: Fiji Ministry of Information. p37.

HICKS HG, GULLET CR (1967)
The management of organisations.

HUSSEIN A (1981)
Effectiveness of school based fluoride mouth rinsing programmes.
MINTZBERG H (1979)
The structuring of organisation. A synthesis of research.
NJ USA: Prentice-Hall. pp65,95,148,216,305.

MINISTRY OF HEALTH (FIJI) (1989)
Annual report for the years 1985 and 1986.

MINISTRY OF HEALTH (FIJI) (1991)
Annual report for the years 1987 and 1988.

MULLINS LJ (1981)
Management and organisational behaviour.
Sydney: Pitman.

PERROW C (1972)
Glenview, Ill, USA: Scott, Foreman & Co.

PUGH DS (1971)
Organisation theory.
London: Cox & Wyman.

SAN JUAN SP (1982)
Dentistry in Fiji.
Suva: Report to the Fiji Dental Association.

SILVERMAN D (1970)
The theory of organisation.

SLACK G (1981)
Dental public health. An introduction to community dentistry.
London: John Wright.

SPEAKE JD, MCKEgg RN (1980)
Initiation of pilot dental preventive project.
Noumea: South Pacific Commission.

SPEAKE JD, SINGH D, LIGANI M (1979)
Noumea: South Pacific Commission.

STONER JAF (1978)
Management.
NJ, USA: Prentice-Hall. pp7-9,31,90,112.
WHO (1952-1965)

- WHO Technical Report Series No. 55, 1952
- WHO Technical Report Series No. 122, 1957
- WHO Technical Report Series No. 163, 1959
- WHO Technical Report Series No. 176, 1959
- WHO Technical Report Series No. 244, 1962
- WHO Technical Report Series No. 267, 1964
- WHO Technical Report Series No. 298, 1965

WHO (1974)
*Modern management methods and the organisation of health services.*

WHO (1978)
*Primary health care. Alma Ata.*

WONG KK (1965)
Manila: World Health Organization, WPRO Report 5501..