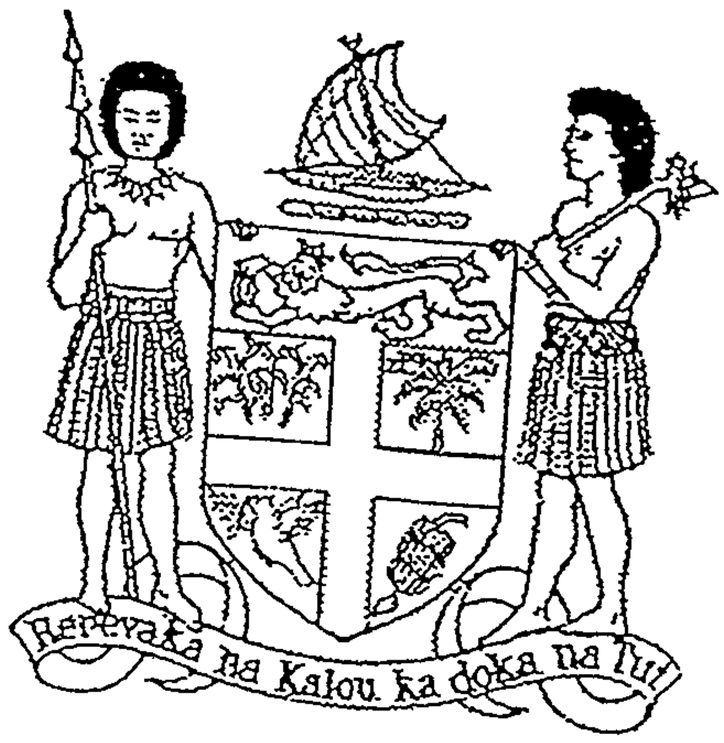
UTILISATION OF DENTAL SERVICES; IT'S SIGNIFICANCE IN THE EDUCATION OF DENTAL PERSONNEL IN FIJI.



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A thesis submitted in partial requirement for the degree of

MASTER OF DENTAL SCIENCE

(Public Health Dentistry)

Department of Preventive Dentistry

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University of Sydney

1994

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Summary

The over-riding principle governing manpower development is that the service has a commitment to improve the dental well-being of the population it is serving. Results from epidemiological survey indicated that the percentage of adults with healthy periodontal tissues fell from 20% at age 20-24 years old, to 4% at age 55 years and over. In dental caries, the mean numbers of affected teeth per person rose from 4.6 at age 20-24 years old to 18.4 at age 55 years and over. Sixty seven percent of the adult population visit the public dental service, predominantly from the low income group, have received no or primary education and are unemployed ($p < 0.001$). Majority of the population (about 70%) visits to the dentist, is triggered when they have a dental problem. Indians appeared to use the dental service few days after experiencing a dental problem while Fijians will wait until they cannot bear the pain ($p < 0.01$). There is a priority demand from the population for prophylactic treatment, restorative treatment and advice. In addition, 58% of the responses indicated that they would like to learn about how to care for their teeth from the dentist. There is recognition by the population that Fiji is facing a manpower problem, indicated by 42.6% of the responses. Thus, the change in the education of dental personnel is designed such that it is preventively and community oriented, emphasis in communication skill and behavioural science in a career path fashion. This is in contrast to the more technical oriented education designed to treat the sequlae of dental diseases, previously adopted since the beginning of dental education in Fiji. Increasing the intake to thirty students per year is an attempt to restore the quantity of dental personnel. In view of the current dental demands and needs by the population, the two category of dental personnel required in Fiji are the Dentists and the Dental Hygienists.

ACKNOWLEDGEMENTS

Associate Professor P D Barnard, Head of the Department of Preventive Dentistry University of Sydney, for supervising the writing of this dissertation and Dr Shanti Sivaneswaran for sharing her knowledge during the two years of study.

Emeritus Professor G N Davies, of Brisbane Queensland for his valuable contribution in providing the necessary documents.

Doungkamol Sindhusake (Poppy) for the statistical analysis of the results of the survey in the utilisation of dental services in Fiji

The Ministry of Fijian Affairs for granting the scholarship, which has enabled me to expand my knowledge in the area of Public Health Dentistry.

The Ministry of Health for granting me a study leave to pursue this course of study.

DEDICATED

To my father, Mr Isimeli Volavola and my mother, Mrs Miriama Volavola

whose wise words guided me in my achievements.

To my husband, Isaac King and my son, Paul King,

for their moral support during challenging times.

To my brother-in-law Edward King,
who passed away on 23.7.93 while I was abroad on study

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BACKGROUND

Fiji

Fiji is a country in the South Pacific lying between latitude 15° and 22° south and longitude 174° east and 177° west. It comprises of two main islands, Vanua Levu and Viti Levu with a total of 320 islands and an area of 18,272 square kilometres. The climate is of the tropical oceanic type with the tempering influence of the prevalent south-east trade winds.

The population in 1993 was estimated to be 756,000 with an annual growth rate of 1.9%. The proportion of the population in the 0-14 years old group is 38%, while 57% are in the 15-59 year old category and 5% in the 60+ year old group. Being a multiracial country the mix of ethnic group is such that 46% of the population are Fijians, 49% are Indians while the other 5% comprises of Chinese, Europeans and Part-Europeans.

Overall approximately 39% of the population are urban dwellers and 61% live in the rural areas. The proportion of urban population increased from 33.4% in 1966 to 37.2% in 1976. However, there is only a small increase in the urban dwellers between 1976 to 1986; the urban population in 1986 had increased to 38.7% from 37.2% in 1976. **(Table 1)**. As shown in **Table 2**, the Central division was the most urbanised (67.3%) compared to the other three divisions in 1986.

Table 1 Population distribution by urban/rural and ethnic origin in Fiji (%) (1966-1986).

	Urban			Rural		
Ethnic Origin	1966	1976	1986	1966	1976	1986
Fijian	23.8	30.5	32.7	76.2	69.5	67.3
Indian	36.9	39.5	41.4	63.1	60.5	58.6
European	85.7	82.7	77.3	14.3	18.3	22.7
Chinese	84.0	85.6	83.8	16.0	14.4	16.2
Part European	71.2	70.6	69.4	28.8	29.4	30.6
Rotuman	38.5	55.2	61.9	61.5	44.8	38.1
Other Pacific Islanders	46.9	48.8	50.0	53.1	51.2	50.0
Total	**33.4**	**37.2**	**38.7**	**66.6**	**62.8**	**61.3**

Table 2: Percentage of urban population by division and ethnic origin in Fiji (1976-1986).

	Fijians		Indians		Total	
	1976	1986	1976	1986	1976	1986
Central	50.5	54.4	75.9	79.7	64.5	67.3
Western	29.6	28.2	25.2	26.3	28.1	28.1
Northern	6.4	7.2	22.0	22.5	14.8	15.0
Eastern	4.5	4.9	59.7	48.3	7.0	6.8
Total	**30.5**	**32.7**	**39.5**	**41.4**	**37.2**	**38.7**

Life expectancy for females in 1992 was 67 years and 62 years old for males indicating that it is a young population.

The major industries are sugar and tourism. Today, tourism contributes as the country's major industry **(Figure 1)**. The Gross Domestic Product per head of population was $F2,659 in 1991.

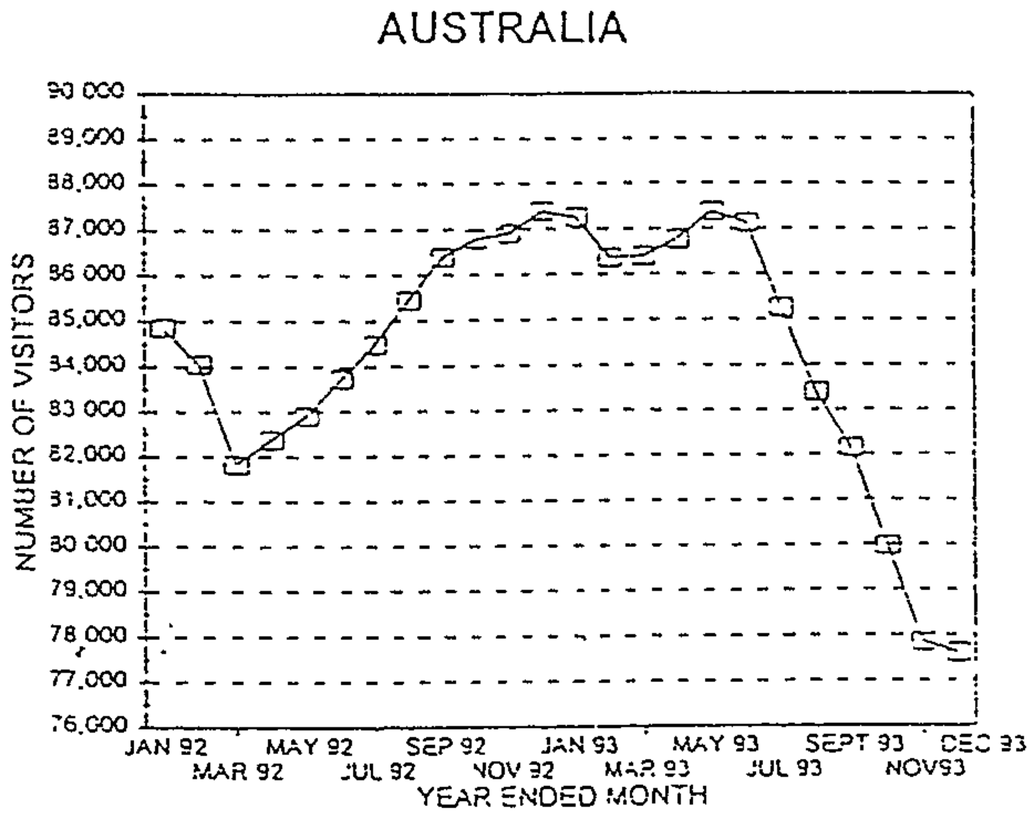
The agent of the Fijian culture is it's commitment to the community, usually but not necessarily by blood relations. At most gatherings yaqona or kava is the national social drink. The ritual of preparation and order of drinking underlines one's social order. The ultimate expression of the Fijian culture is the `solevu' an

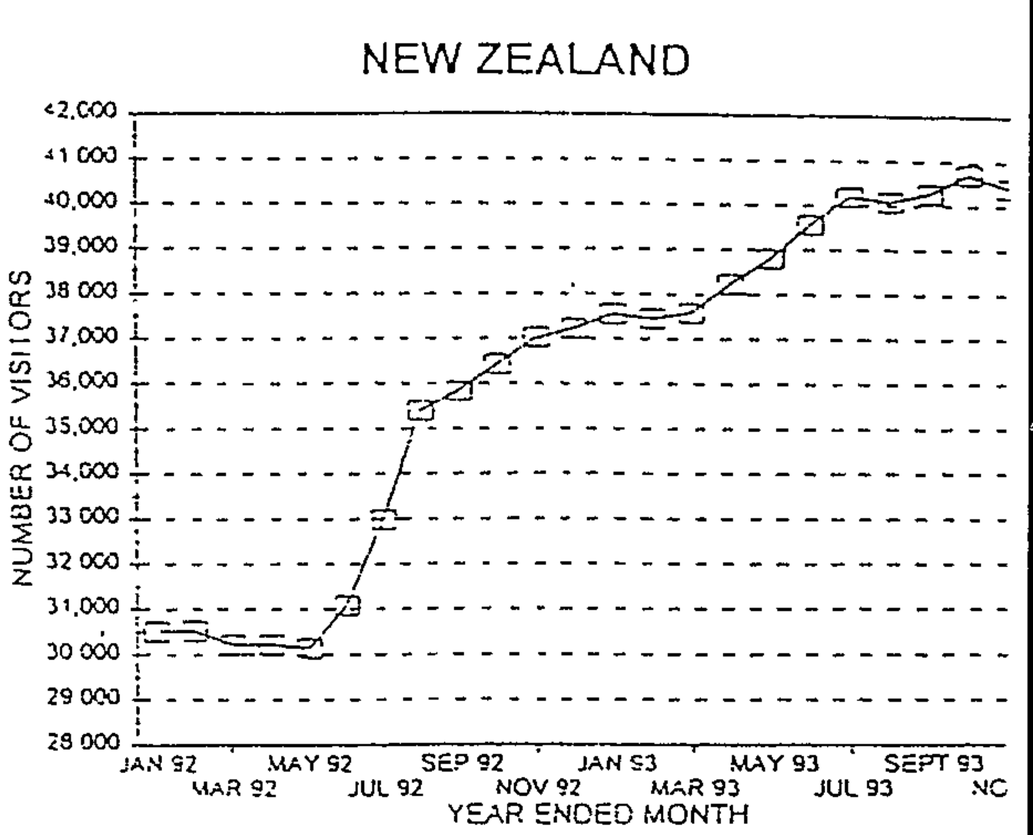
enormous feast, where two groups meet to exchange wealth and food; kinship ties are also renewed and strengthened on this occasion.

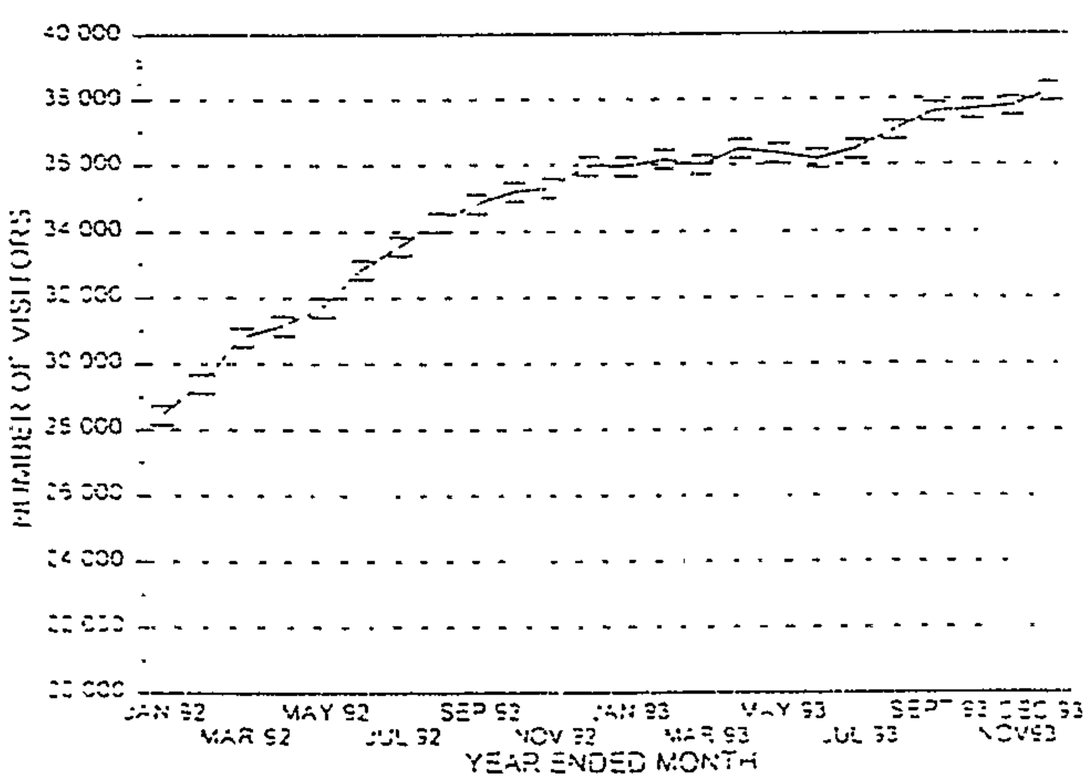
English is the official language in Fiji, so there is no problem with communication. The education system is also conducted in the English language and the literacy rate is 86%. Education is compulsory from the age of six years for all primary schools, however there are a number of drop-outs at secondary school level depending on financial status or academic competency of the students.

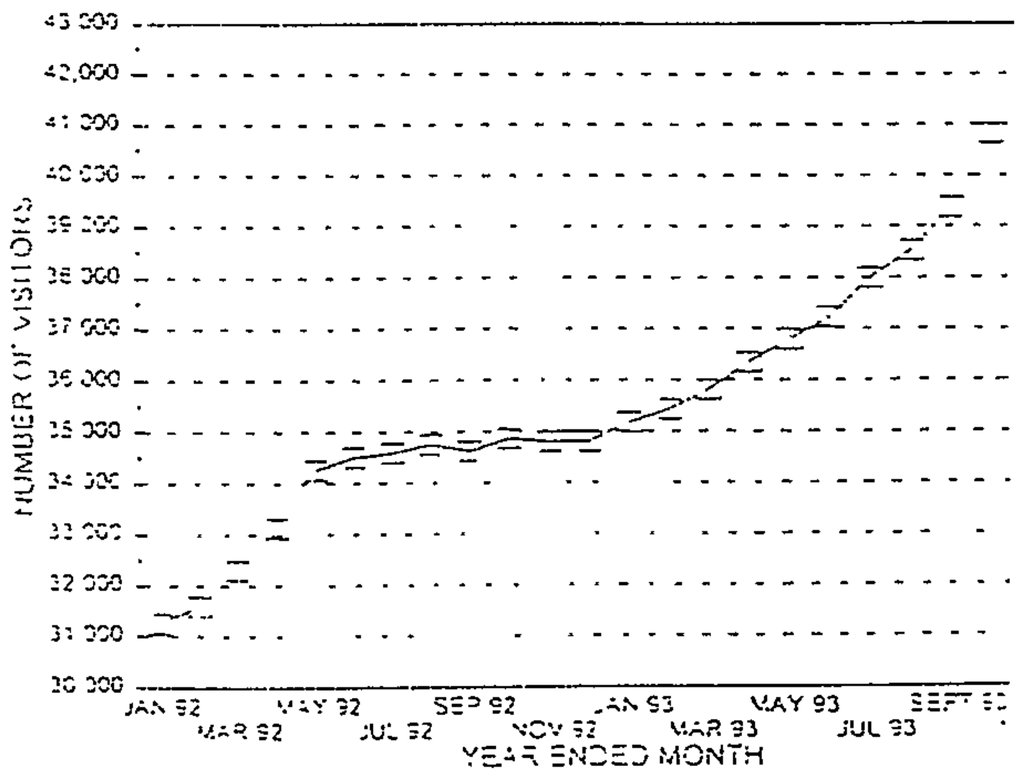
Figure 1 - Visitor Arrivals to Fiji by country of Residence

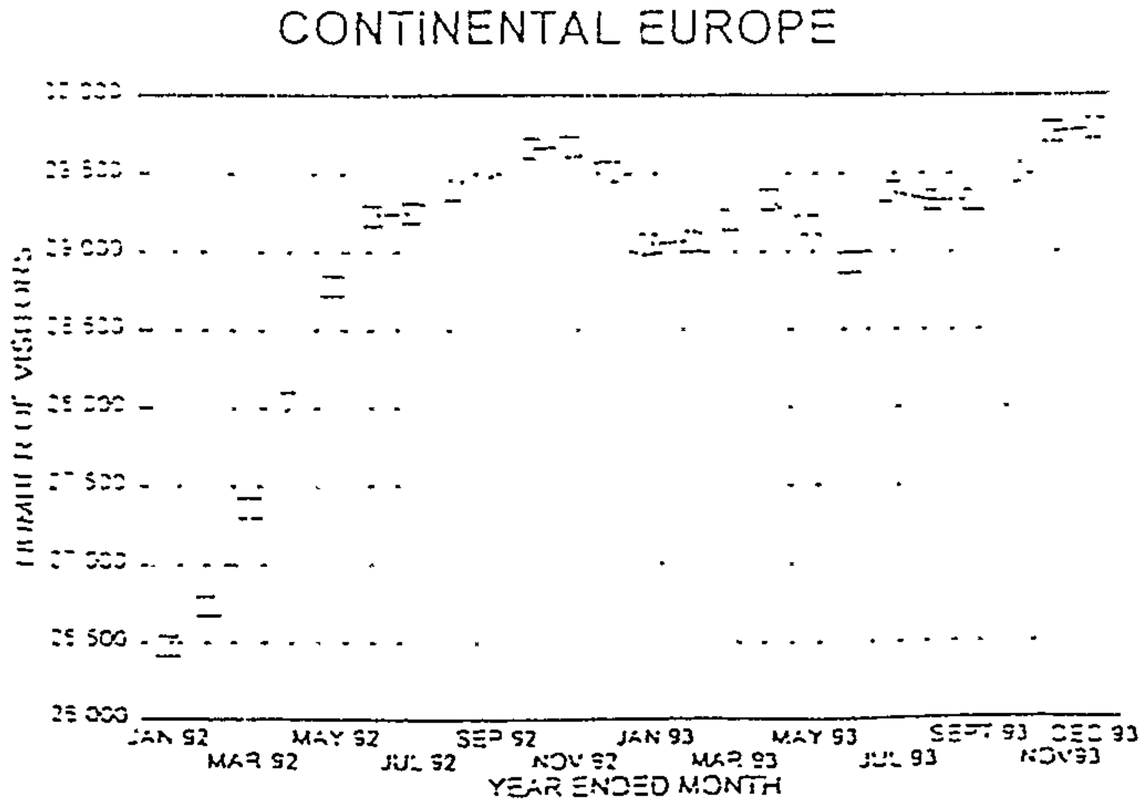
(January 1992 - December 1993).

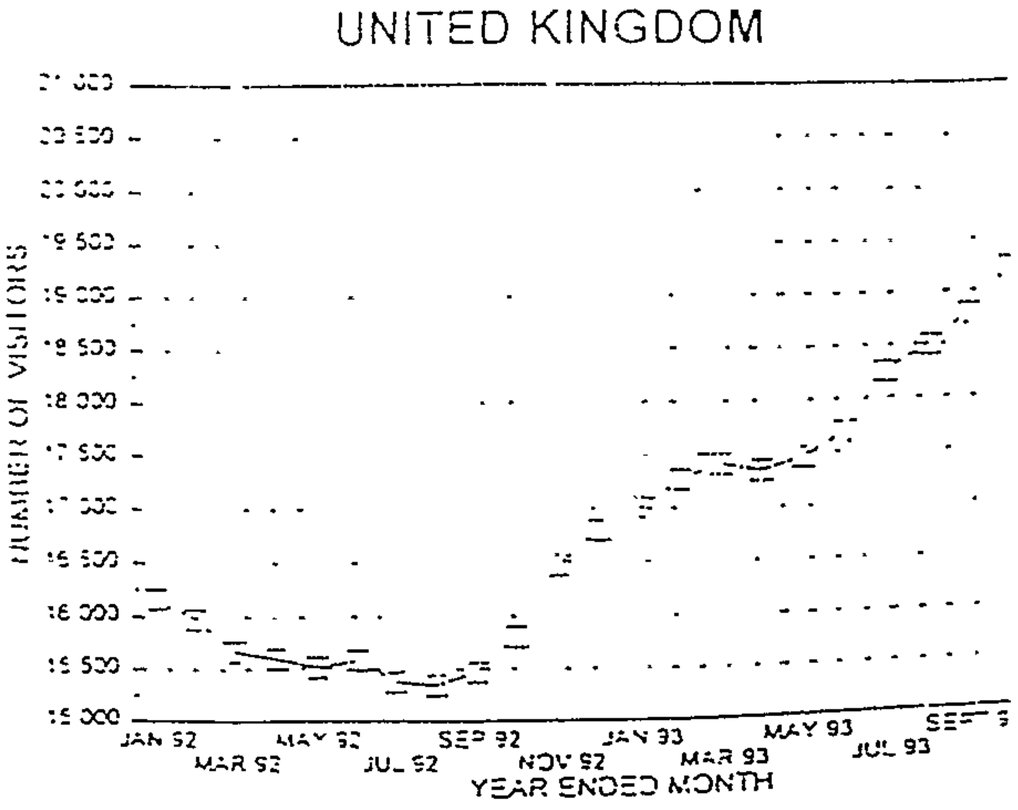












1. INTRODUCTION

Since WHO set up the goal of "health for All by the year 2000", health has assumed a new socio-philosophical perspective. Attainment of health is no longer considered to be synonymous with the cure of disease but is viewed from a broader perspective as a ***fundamental human right*** **(Saparamandu, 1986)**. The health care delivery system is therefore part of a strategy for improving the quality of life of the people.

Fiji's national health policy being that ***"it shall be the right of every citizen of the Republic of Fiji***, irrespective of race, colour, creed and financial circumstance or poverty to have ***access to a national health system*** which provides a high quality health service, the principal function of which is to promote, protect, maintain, restore and improve the health and well-being of the citizens of Fiji to the maximum extent possible as a significant component of their ***quality of life (Ministry of Health, 1993)***. Access to health care is a vague concept and it is often thought of as the ability to enter or use a system. In discussing access, Penshansky and Thomas in 1981, proposed that access encompasses the specific dimensions of availability, accessibility, accommodation, affordability and acceptability. These terms are defined in **Table 3**.

Table 3 - Definition of Access

(Source: Penchansky & Thomas, 1981)

Availability	Is the relationship of the volume and type of existing services (and resources) to the clients' volume and type of needs. It refers to the adequacy of the supply of physicians, dentists and other providers,of facilities such as clinics and hospitals, and of specialised programs and services such as mental health emergency care.
Accessibility	Is the relationship between the location of supply and the location of clients, taking account of client transportation resources and travel time, distance and cost.
Accommodation	Is the relationship between the manner in which the supply resources are organised to accept clients (including appointment systems, hours of operation, walk-in facilities, telephone services) and the clients' ability to accommodate to these factors and the clients' perception of their appropriateness.
Affordability	Is the relationship of prices of services ... to the clients' income, ability to pay and existing health insurance. Client perception of worth relative to cost is a concern here, as is clients' knowledge of prices, total cost and possible credit arrangements.
Acceptability	Is the relationship of clients' attitudes about personal and practice characteristics of providers to the actual characteristics of existing providers, as well as to provider attitudes about acceptable personal characteristics of clients ... the term appears to be used most often to refer to specific consumer reaction to such provider attributes as age, sex, ethnicity, type of facility, neighbourhood of facility, or religious affiliation of facility or provider. In turn, providers have attitudes about the preferred attributes of clients or their financial mechanisms. Providers either may be unwilling to serve certain types of clients (e.g welfare patients) or, through accommodation, make themselves more or less available.

Furthermore, the Ministry of Health in 1994, will pursue it's health priorities which include the following;

- National overview plan
- Cost recovery and health insurance
- De-centralisation
- Fiji School of Medicine - Physical re-development
- Donor co-ordination
- Health information
- Workforce projections/planning
- Linkage of plans and budget
- Privatisation
- National policy plans for disaster preparedness

As the main provider of health care in Fiji, the Ministry of Health offers preventive, promotive, rehabilitative and curative health service. Because Fiji's dental service is an integral part of the overall health service it embraces the above policy and health priorities.

The World Health Organisation in 1965 categorised dental health services into three groups **(WHO, 1965)**. Indeed, Fiji falls into group three where dental services are provided by dentists and dental auxiliaries. One of the features of oral health care, is the existence of the oral health services to meet the needs of the population, and secondly these services are often insufficient to fulfill the

needs of the population in the traditional curative-restorative-rehabilitative way. Service records are insufficient for assessing the dental health status of the whole population. Coupled with interview surveys, together they provide useful additional information on the opinions, attitudes and behaviour of the population regarding dental health. The use of service records and interview surveys also demonstrate the effectiveness of regular dental care through the various phases of life, and the cumulative outcome in terms of aims achieved. These information could then be valuable sources not only for evaluating dental health services but for planning dental care.

According to the national survey in 1985, the dental services were able to cope with less than five percent of the country's needs for dental care (this is synonomous to a small bite from a big apple). Because of a drastic reduction in dental manpower and other resources since that time, the situation has now worsened **(Davies, 1990)**. There is virtually universal recognition by the population itself, by health administrators and by political leaders of the need for improvement of the oral health services for more adequate fulfilment of oral health needs, particularly by prevention.

It is understood in this dissertation that there is a comprehensive program for schools as they are the 'priority' target group. Evidently, in 1987, 161 schools were visited and this had increased to 770 schools visited in 1992. After the school years period there seemed to be a lack of continuity in the usage of dental

services, which subsequently lead to the accumulation of dental diseases observed in adults. It is then common practice for adults to seek emergency dental care, leading to an increase in edentulousness in adults caused by periodontal disease and dental caries. The saying " *Fiji is famous for it's smile*" as a dental health education message is ironical if edentulousness will be a feature of that smile. For these reasons, planning is mandatory to prevent the worsening of the current situation.

Planning is the process of preparing a set of decisions for action in the future and must precede development and change in any organisation. Dental health manpower planning is the process of estimating the quantity of manpower, plus varying types of knowledge and skills, needed to bring about planned alterations in the dental health service system, so that the changes of improvements in the dental health of the population is optimal. General dental health manpower planning involves;

- the analysis and projections of dental health needs and demands for services by the population and such data are obtained by epidemiological surveys and from treatment records (utilisation).
- the assessment of present dental health manpower availability and analysis of it's pattern of utilisation
- the formulation of policy
- the estimation of future manpower requirements and of relevant education and training needs in the light of the overall dental health plans **(Slack, 1981).**

The purpose of this dissertation is to determine the pattern of utilisation of the dental services by the urban adult population in Fiji and factors affecting it. As it will be revealed later in the chapter, the number of the adult population using the services is more or less constant from 1988-1992. At the same time the generally accepted conclusion that dental disease is prevalent in adults is beyond doubt. Therefore the role of improving the dental status of these people lies in the hands of the profession, who will be trained appropriately to the needs of the populations of Fiji. Simultaneously, the number of dental personnel should be increased to cater for this new role while continuing the usual curative procedures. This process is described as health manpower planning.

The over-riding principle governing manpower development is that the service has a commitment to improve the dental well-being of the population it is serving. If the services are not achieving that objective, then alternative solutions relating to increasing the efficiency and productivity of dental health workers or to changing the dental health manpower profile, by changing the proportions of different grades of workers, should be considered.

The development of dentistry in Fiji has relied on the output of dental graduates from the Central Medical School later named Fiji Medical School. How the dental students are selected and educated is congruent to the needs and resources available to the country. Recently, in his opening address on World Health Day 1994, the Permanent Secretary for Health reiterated the notion that '*in Fiji, dental*

decay and gum disease are rife'.

Therefore at this juncture it may be appropriate to define the terms prevention and control of dental diseases. Prevention are those activities carried out to avert the onset of the disease, whereas control are those activities carried out to combat the prevalence of the disease thereby bringing it to an acceptable level.

With the high prevalence of the two major dental disease, it is appropriate to plan the manpower which is required to control these two dental diseases. Moreover, the human resources are more than the backbone, they are also most of the 'flesh' of the services. It is the people who cure, restore and help people, so it follows that the way they are employed, deployed, trained, developed and motivated are the most important issues in achieving a mission.

There is a need to establish some measurable goals based on the data collected, the resources available, public manpower, facilities and funds. Some appropriate measurable goals proposed by the writer for a ten-year period are:

<u>Proposed measurable goals for a ten-year period</u>

- To increase the utilisation of services by 15% of the adult population
- A decrease in edentulousness in the adult population by 30-40%.
- To create dental awareness (through education, health and mass media sectors) and commitment among the population for the adoption of desirable oral health practice.

- An appropriate dental school curriculum for the education of Dental Assistants, Dental Hygienists, Dental Therapists and Dentists which is community-oriented.

- An increase in the manpower supply from the Fiji School of Medicine by 50%. This will reduce/eliminate the need to recruit expatriate dentists from the Philippines.

- Monitoring of goal achievements at the end of the fifth year and evaluation at the end of the ninth year.

This dissertation aim to describe the oral disease prevalence, the pattern of utilisation of the dental service in adults and some aspects that Fiji is facing concerning the dental manpower problem. To accomplish the proposed measurable goals the writer's major strategies lie in the change of the curriculum with the general objective of introducing dental students to the concept of primary health care and problem-based learning. These students are due to follow a career-path structure of training permitting re-entry and exit of dental students corresponding to the desired occupation. In addition to the changes in the curriculum, there is a need for improvement on the mix and an increase in the number of dental personnel to enhance the delivery of the dental services.

2. SITUATION ANALYSIS

2.1 ADULT DENTAL CARIES AND PERIODONTAL DISEASE IN FIJI

Fiji has in the past, and remains at present, been successful at controlling or eradicating many of the health problems that beset less developed countries. Regarding dental health, there are problems from time to time which exist and deter in some way the struggle in providing the ideals in combating dental diseases. The two most common dental diseases are dental caries and periodontal disease. The Permanent Secretary for Health during his speech on World Health Day in 1994, mentioned that about 22% of the population at 55 years and over have no natural teeth at all. Although the most recent epidemiological survey was done more than five years ago (1985) by Davies, results from that survey will be used as the basis of the disease prevalence in Fiji. Complementing these data, a pathfinder questionaire survey on the usage of dental services was conducted by the writer from the tenth to the twenty ninth of January, 1994.

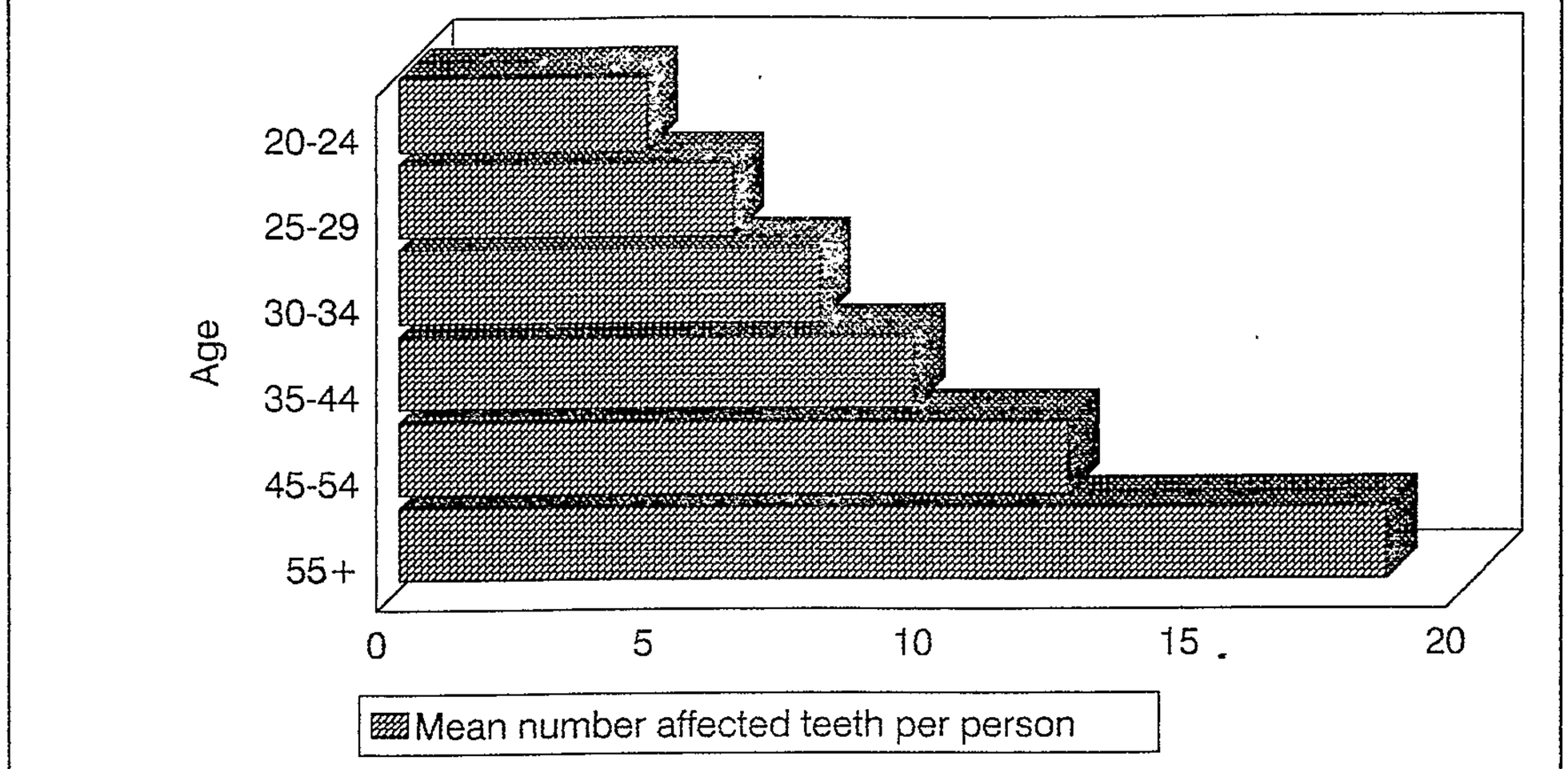
2.1.1 Dental Caries

In the adult population, the percentage of persons with one or more decayed, missing and filled teeth rose from 82% at age 20-24 years old to 98% at age 55 years and over. The mean numbers of affected teeth per person rose from 4.6 at age 20-24 years old to 18.4 at age 55 years and over **(Figure 2)**. Of these, at age 20-24 years old, 46% were decayed, 35% had been extracted and 19% had been filled. At age 55 years and over 9% were decayed, 90% had been extracted and

1% filled.

Figure 2 - Mean number affected teeth per person

(Source: Davies, 1992)



2.1.2 Periodontal Disease

Periodontal disease became an increasingly serious problem with advancing age. The percentage of adults with healthy periodontal tissues fell from 20% at age 20-24 years old, to 4% at age 55 years and over. Calculus is present in 69% of 20-24 year olds and in 74% of adults over the age of 55 years old. Periodontal pockets are present to only a minor extent (1%) at age 20-24 years old, but increase to 20% at age 55 years and over. The percentage of persons with shallow pocket (4-5mm depth) increases from 2% for 20-24 year-olds to 18% for the 55+ age group. About 2% of persons at 55+ age group had deep (> 6 mm) periodontal pockets **(Table 4)**.

Table 4 - Periodontal Disease in adults

(Source: Davies, 1992)

	Age					
Item	20-24	25-29	30-34	35-44	45-54	55+
% with periodontal disease	80	87	96	94	98	96
% with gingivitis only	9	7	3	6	3	1
% with gingivitis and calculus	69	75	88	74	79	74
% with shallow pockets	2	5	4	13	15	18
% with deep pockets	0	1	1	1	1	2

2.1.3 Missing Teeth and Dentures

The principal causes of tooth loss are dental caries and periodontal disease. It should be appreciated that the attitudes of the dental profession, the attitudes of their patients, and the social norm at that particular time, all have considerable influence on whether a tooth is restored or extracted. The extraction rate rises steeply from 1.6% at age 20 - 24 to 16.6% at age 55 years and over. Up to the

age of 30, caries is the main cause of the loss of teeth, after which periodontal disease **(Figure 3)** and the need for dentures assume increasing significant roles **(Figure 4)**. The proportion of persons completely edentulous rose from 1% at age 30-34 years to 22% at age 55 years and over **(Figure 5)**.

Figure 3 - Missing Teeth - average/person (age 20-55+)

(Source: Davies, 1992)

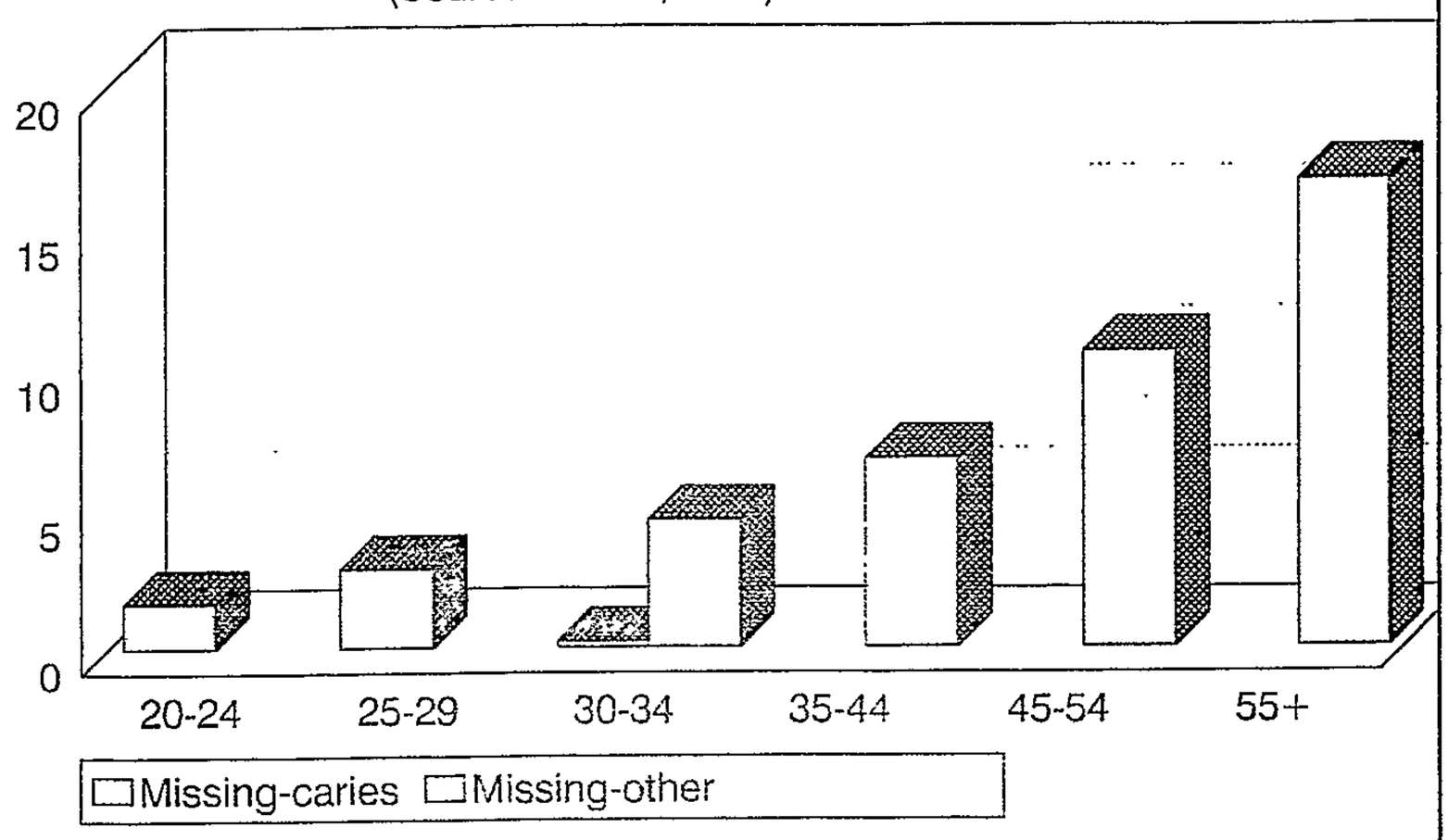


Figure 4 - Persons wearing dentures (%)

(Source: Davies, 1992)

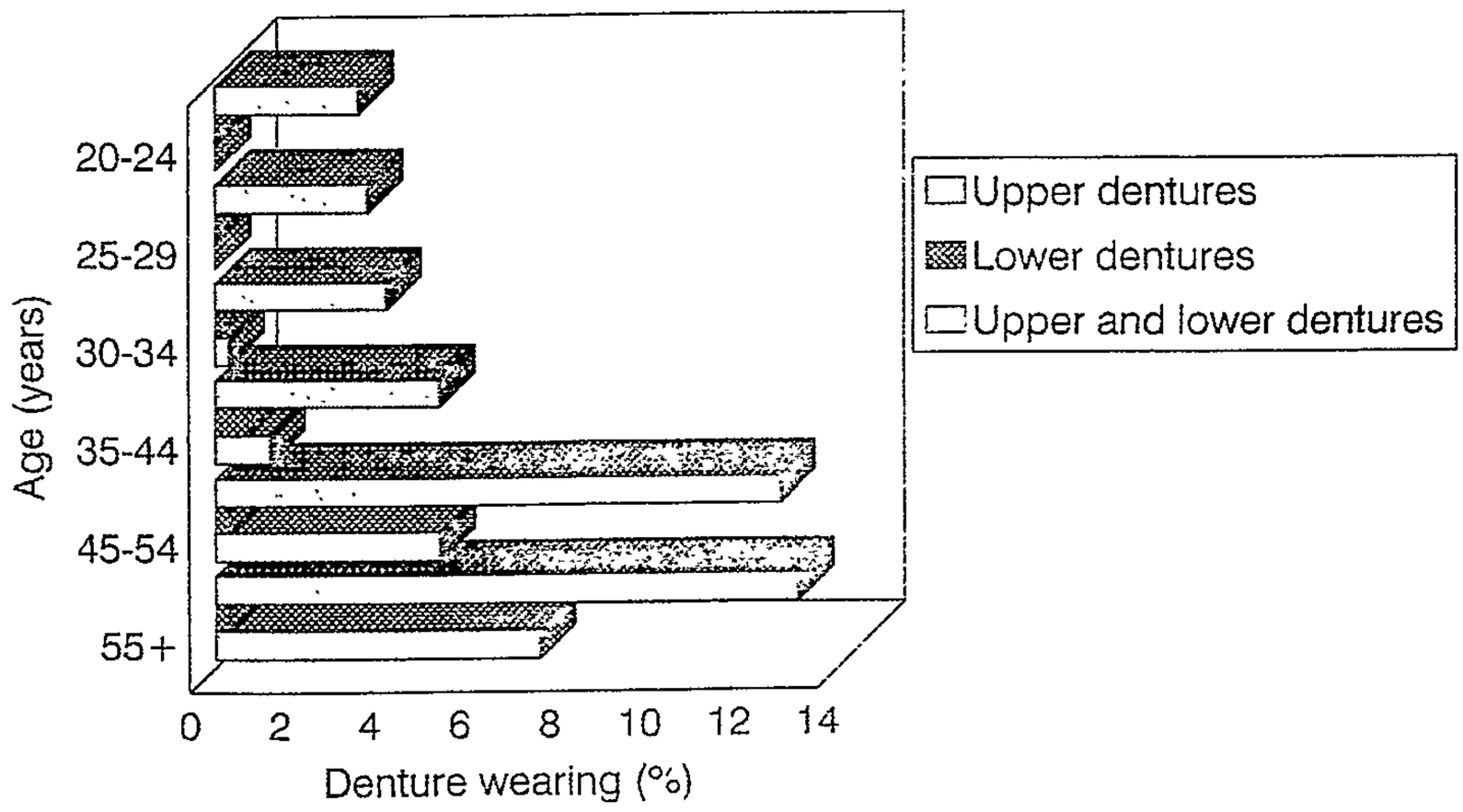
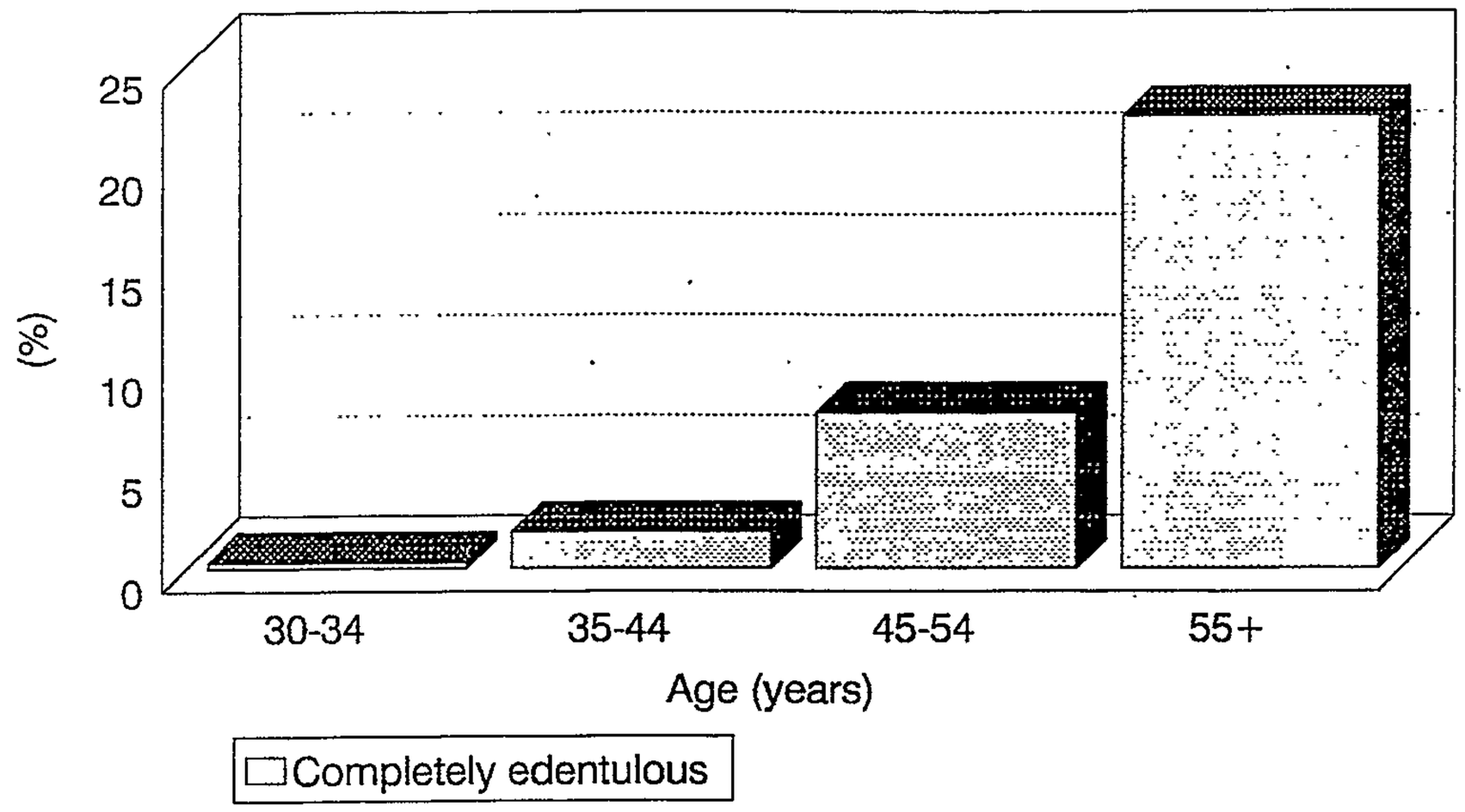


Figure 5 - Edentulousness in Fiji (1985)

(Source : Davies, 1992)



Generally extraction was the treatment of choice, having increased by 16.6% at age 55+ in 1985; and the restorative work carried out was minimal **(Figure 3)**. The excessive demand for extractions and the needs for fillings and periodontal care are not being met on the same proportional basis.

Results from this survey confirmed that the most serious oral health problem in Fiji is the premature loss of teeth in adults. Since the major causes of loss of teeth are dental caries and periodontal disease and both conditions are preventable, there should be a re-orientation of the training and education of dental personnel to place greater emphasis on the promotion of oral health through prevention and oral health education rather than upon the treatment of the effects of oral disease.

2.2 UTILISATION OF DENTAL SERVICES IN FIJI

2.2.1 Introduction

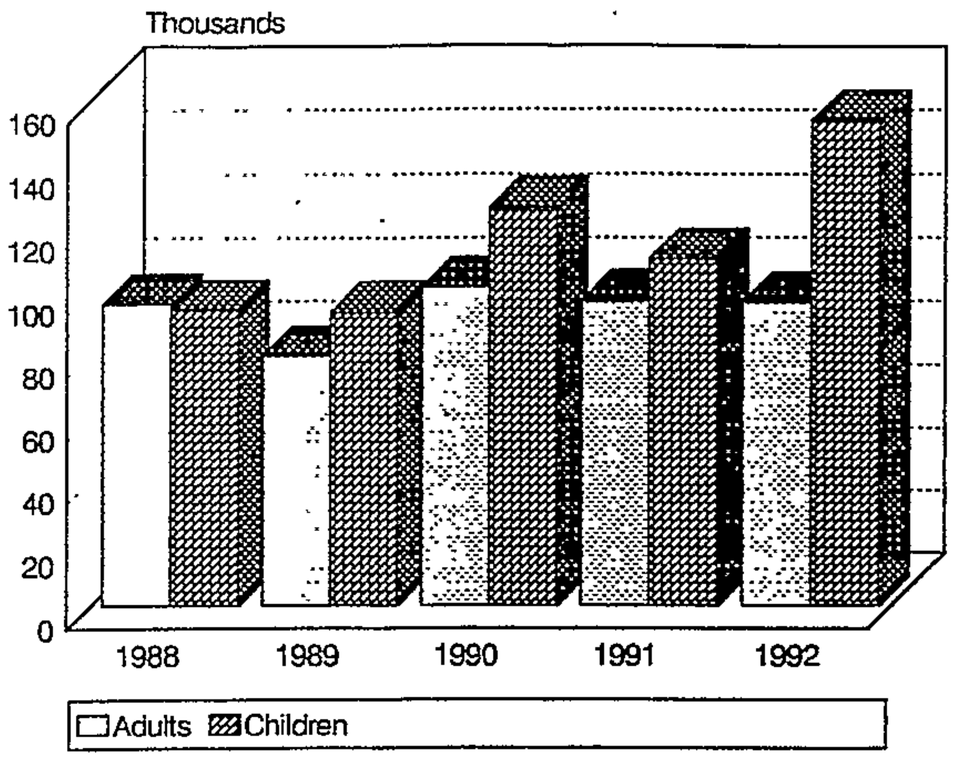
It can be said in most medical and dental illness situations that it is the '*sick*' individual and not the service who takes the initiative by presenting for treatment, and the service responds. To take the case of the individual patient, we must glance briefly at the concept of the '*iceberg of disease*'. This concept presents the natural iceberg, whereby a large proportion of illness floats unseen below the surface of the water, and remains unnoticed by the formal health services. A retrospective study in the usage of the dental services in Fiji from the years 1988 to 1992 is shown on **Table 5** and **Figure 7**.

Table 5 Dental attendance (1988-1992)

Attendances	1988	1989	1990	1991	1992
Adults	95,680	79,285	100,958	96,471	95,904
Children	93,563	93,082	125,855	109,540	153,413
Total	159,245	170,368	226,813	206,011	249,317

Figure 7 - Dental Attendances in Fiji (1988-1992)

(Source: Ministry of Health 1993)



Apparently, during these years (1988-1992) there seemed to be a constant number of adults seeking treatment without any substantial increase. It is therefore, worth asking the question why this should be so. Some of the factors may be external rather than internal to the individual, for example he/she may be unable to afford the prospective monetary cost, he/she may be unable to gain access to the appropriate practitioner, or he/she may be totally unaware of his/her illness, as is often the case with dental disease. These practical factors may, however, be outweighed by more personal and psychological ones. He/she may be living in a society whose cultural norms throw scorn on the sick, perhaps regarding sickness as an admission of personal wickedness or weakness. He/she may regard other solutions as more efficacious, such as cure by folk remedies, religious invocation, or consultation with friends. Perhaps he/she may not regard the doctor or the dentist as providing the services he/she thinks he/she needs. He/she may not be prepared to face the possible consequences of reporting illness, such as time off work, operative techniques, or hospitalisation.

Factors like these, will vary from person to person, although it is possible to suggest some generalised patterns of difference. Attitudes vary between the social classes, especially towards dental care, they vary by the age of the person concerned, they vary by the sex of the person, the education he or she has received and by his or her previous experiences of, and images of, a particular service.

It is assumed that utilisation is directly related to oral health **(Figure 8)**. Apparently, those who seek treatment are given various options, but in some cases the inevitable treatment of extraction was the only option. Thus it is observed in **Figure 9** that extractions do comprise the majority of treatment procedures.

Figure 8- Conceptual model of factors associated with the level of dental health

Source: (Slater and Shuval, 1976)

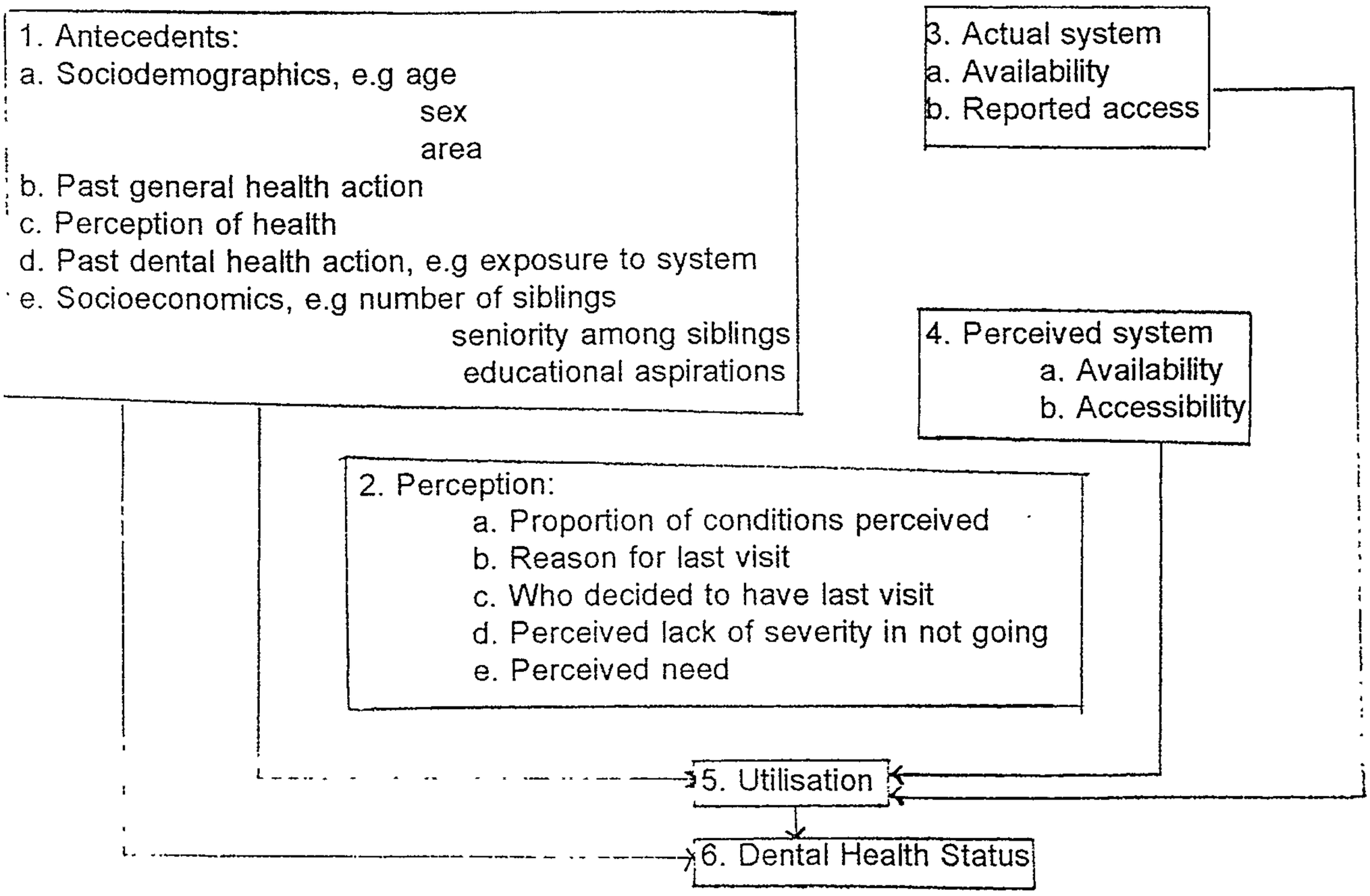
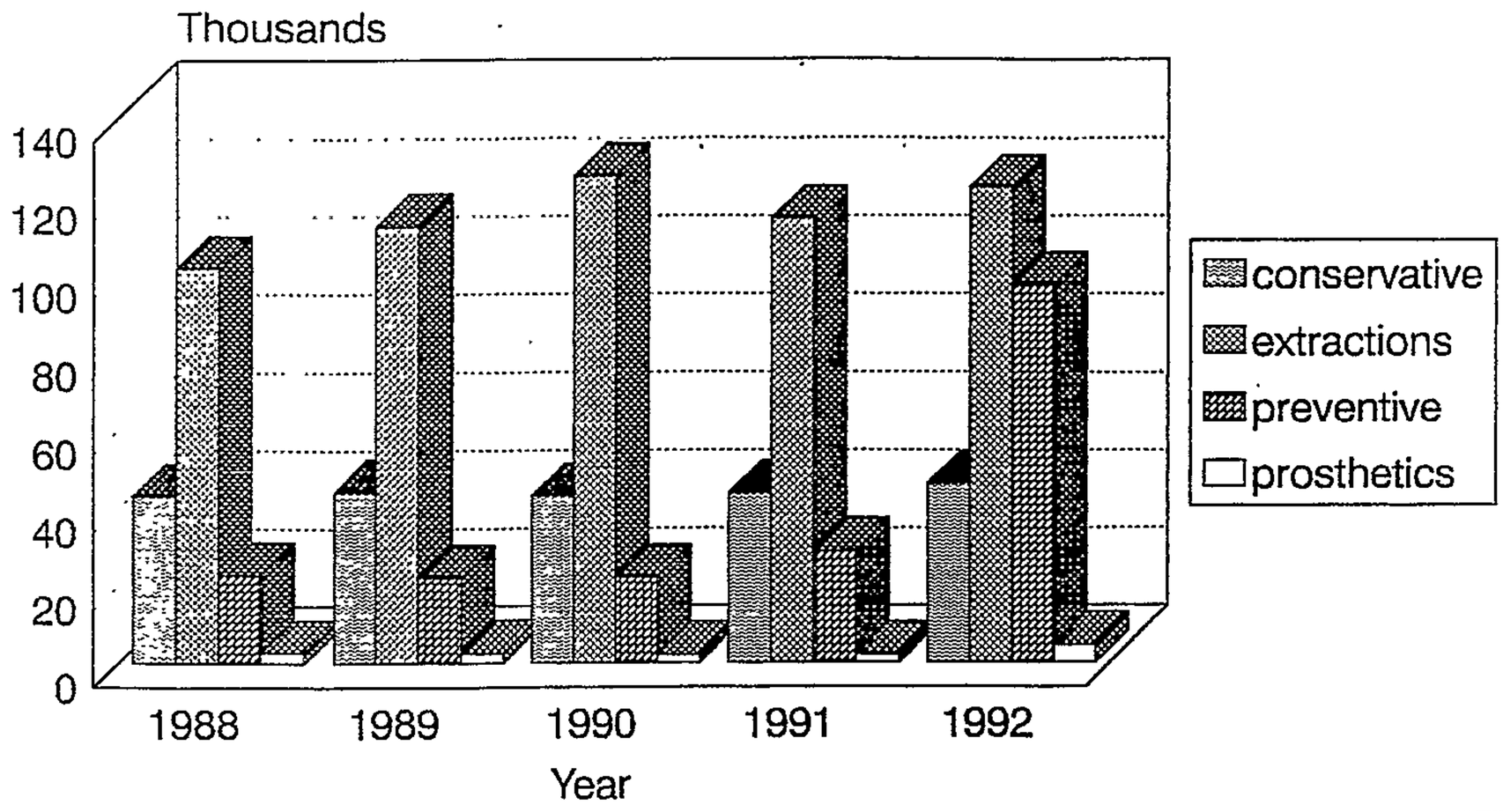


Figure 9 - Four major dental procedures (1988-1992)

Source:(Ministry of Health, 1993)



To sum up, the equation of forces which decide whether or not the '*patient*' seeks treatment may be in part practical, in part the cultural values of his society, and in part his own personal make-up. The patient's personal attributes will in turn be influenced by physiological, psychological, and sociological factors.

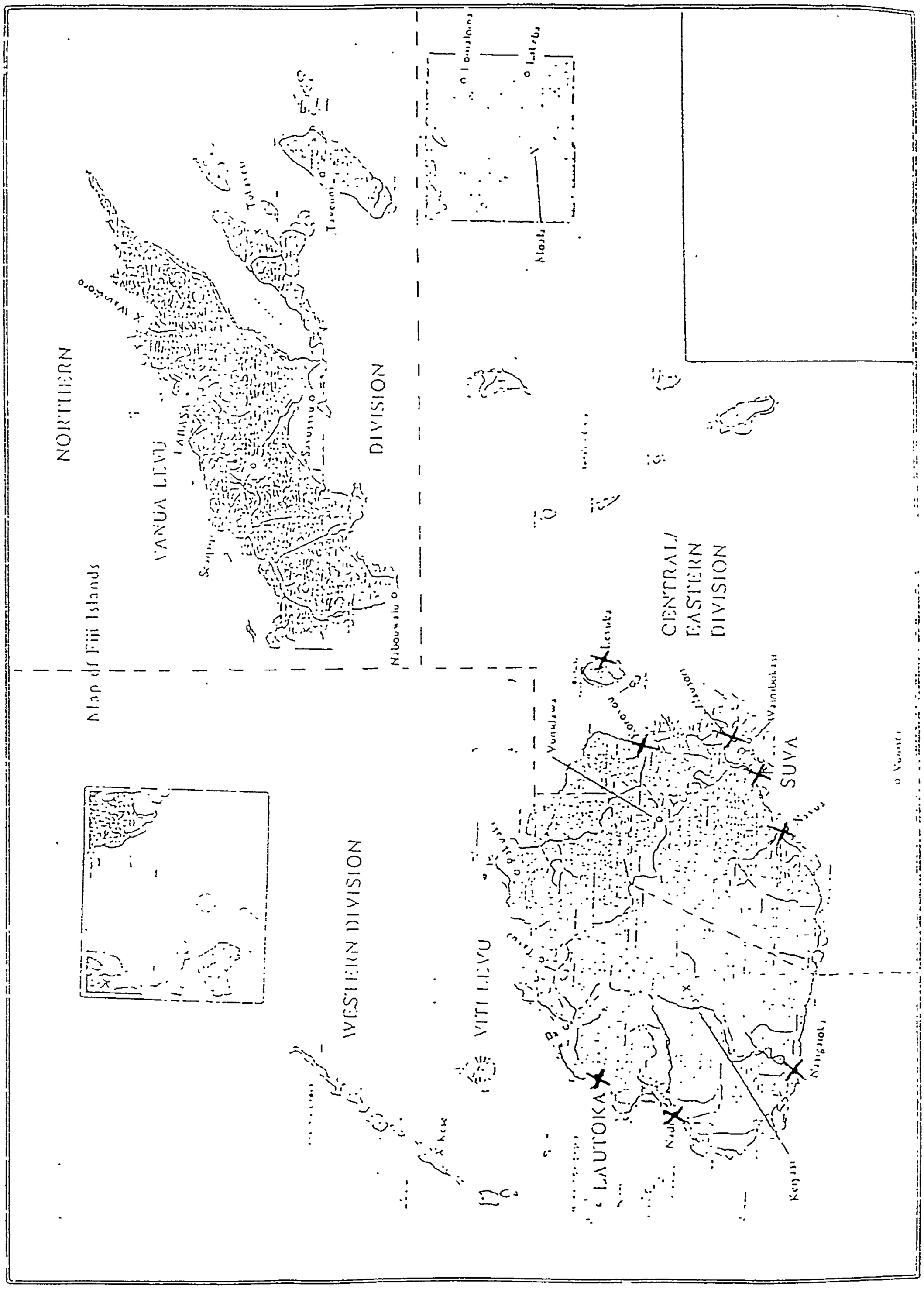
2.2.2 Aim

The purpose of this study is to define the need assessment in the utilisation of dental services of the adult population which may in turn substantiate the need for a change in the education of dental personnel and the demand for more dentists/dental personnel.

2.2.3 Method

A questionnaire was formulated with the objective of eliciting the demographic, service utilisation, attitude and behaviour of the respondents. A sample of the questionnaire is on **Appendix 1**. Simple layman's English was used and it was understood by many of the respondents. Nine urban/periurban areas **(Figure 10)** were selected with every intention of allocating equal number of questionaries to each town/city. However, due to the urbanisation trend **(Table 2)**, more questionaires were allocated to Suva and Lautoka areas being the only two cities. Approximately 71% of the 1,000 questionaires were returned, representing the urban/periurban adult (> 20 years of age) population in Fiji. The age of 20 years and over was decided as representing the adult population because those under this age, but over 15 years old are considered to be 'paying children' in the recording system of treatment service in the country. Data collected was entered using the Microsoft Excel 4.0 and analysed using the SPSS computer program with the guidance of the Statistician at the Department of Community Medicine, Westmead Hospital.

Figure 10 - Survey areas (marked with 'x')



2.2.4 Results

2.2.4.1 The sample

From the age sample (n = 671) who responded to the questionaire, about 34.7% were aged less than 30 years old, 36.7% were between the age of 31-40 year-old and 28.6% were 41 years and over.

There were 48% of males and 52% of females in the sample. About 54.7% of the sample are Fijian and 45.3% are Indians, representing the two major races in Fiji. Eighteen percent of the sample received no or primary education, 52.3% reached secondary school education while 29.7% reached tertiary education.

Income was measured as the family annual salary. The low income group consist of 37.8% of the sample with an annual salary of less than $6,000/year; 28.9% are in the medium income group earning between $6,000-$12,000/year while 33.3% are in the high income group earning more than $12,000/year.

The different category of occupation is adapted from the London Classification of Occupation for 1980, and slightly modified to be suitable for this study, is listed below.

Class 1 - Doctors, Lawyers, Engineers

Class 2 - Teachers, Nurses, Sales manager

Class 3 -(non manual) - Bank officers, clerks/typists, Policeman

- (manual) - Trade person

Class 4 - Drivers, Farmers, Salesgirl, hotel workers

Class 5 - Gardeners, Cleaners, market vendors

Class 6 - Unemployed, housewife, retired person

Class 7 - Students

To ease the analysis of statistics, the occupation classification was reduced to the categories of professional (Class 1 and 2), non professional (Class 3, 4 and 5) and unemployed (Class 6 and 7); thus 21.7% are in the professional occupation, 55% in the non professional occupation while 22.7% are unemployed.

2.2.4.2 Service utilisation

Age

From the sample (n = 662), 67.5% of the respondents indicated using the public hospital or health centre, 24.3 % use the private practice and 8.2% use both public and private dental services. Majority of all the age group visit the dentist only when there is a dental problem (67.3%) and only 32.7% visit the dentist when there is no dental problem (n = 669). For the <30 year-old group 59.6% visited the dentist within the last 12 months; for the 31-40 year-olds 50.8%; for the >41 year-olds 41.5% ($p < 0.05$) **(Figure 11)**. Most of the (n = 662) all age group pay their own dental fees (89.0%) but 18.2% from the <30 years age group do not pay for their own fees which was slightly more in proportion compared to the other two age groups ($p < 0.05$) **(Figure 12)**. More than half (59.1%) of the respondents thought the dental fees are affordable, while a third of the respondents (30.9%) thought that the dental fees cost too much (n = 641) **(Table 6)**.

Table 6 - Age and Utilisation (%)

	Place of visit			Time of visit		Last visit*		Pay fees*		Fees are		
Age (yrs)	Priv.	Pub.	Both	Only when in trouble	when not in trouble	<12 months	>12 months	Yes	No	Afford able	Cheap	Cost too much
<30	24.3	65.0	10.7	62.0	38.0	59.6	40.4	81.8	18.2	58.6	8.8	32.6
31-40	25.3	70.1	4.6	69.0	31.0	50.8	49.2	92.6	7.4	60.3	11.7	28.0
>41	23 0	67.4	9.6	72.1	27.9	41.5	58.5	93.8	6.2	58.3	9.1	32.6
All	24.3	67.5	8.2	67.3	32.7	51.5	48.5	89.0	11.0	59.1	10.0	30.9

* $p < 0.05$

Figure 11 - Age and last visit

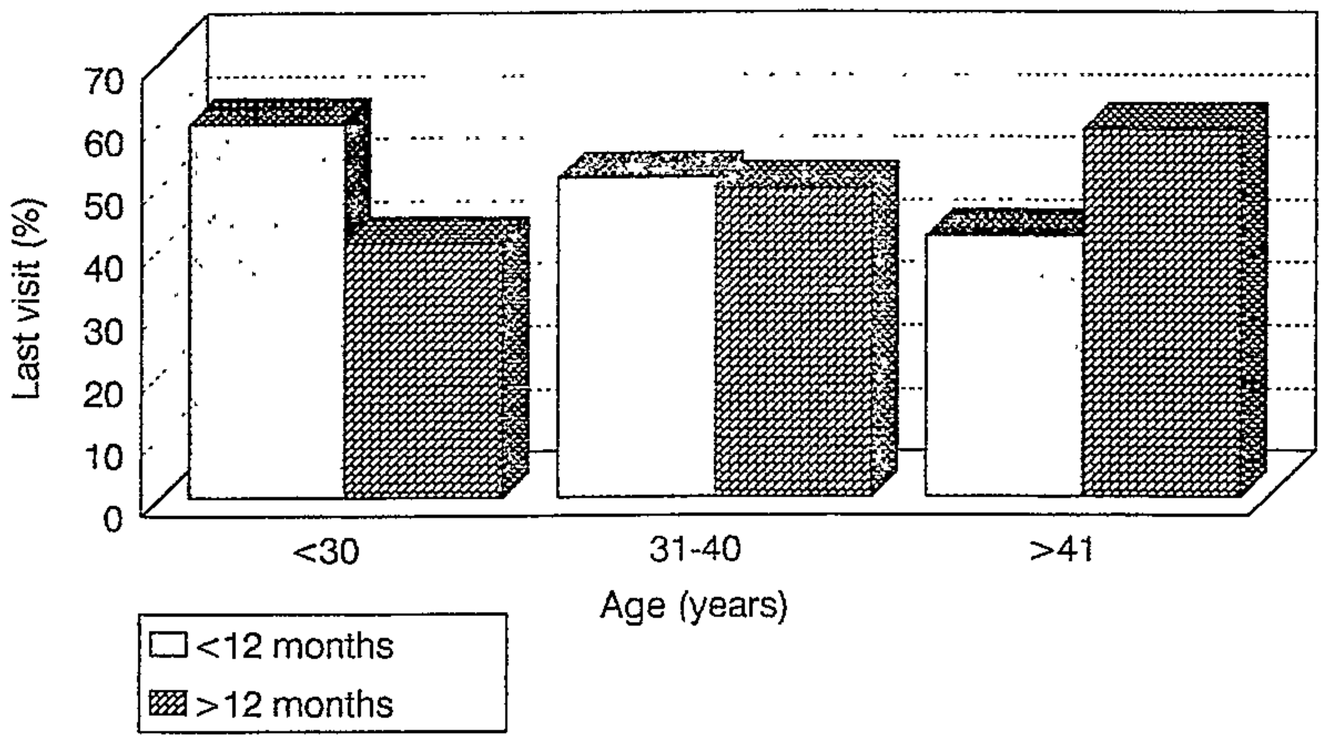
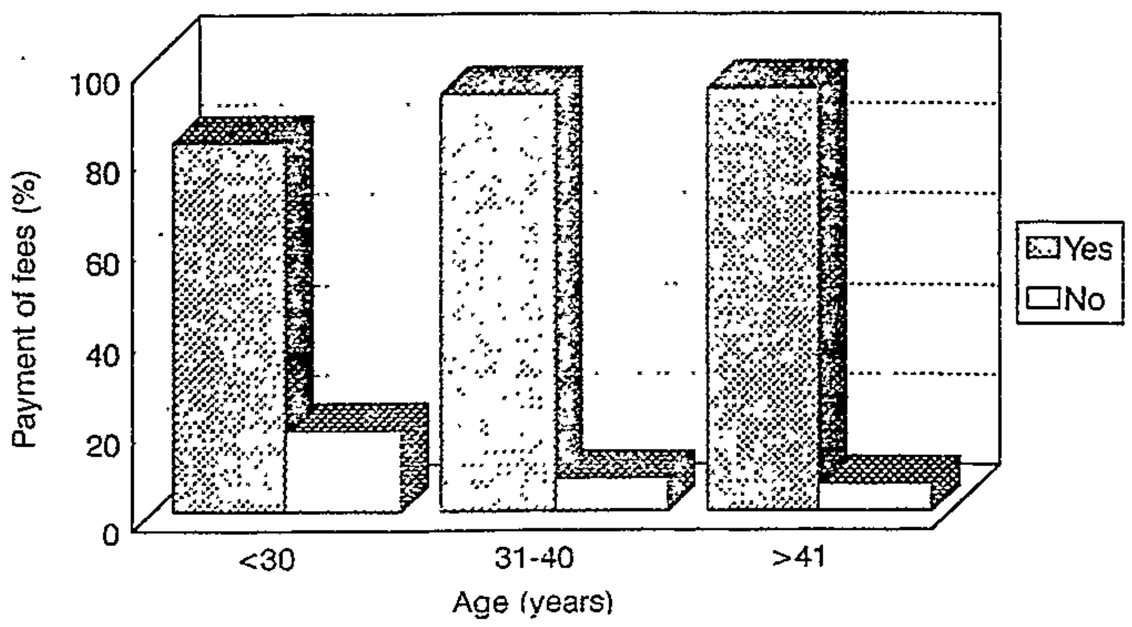


Figure 12 - Age and payment of fees



Sex

Of the 699 adults, 67% use the public dental service **(Table 7)**. Females tend to use the public service more (69.9%) than males (65.3%), while males use private service more (25.2%) than females (23.2%). Males (9.2%) use both the public and private services slightly more than females (6.9%). The sample (n = 706), showed that 67.3% of the males visited the dentist only when there is a dental problem. Similarly, 66.8% of the females visited the dentist only when there is a dental problem. Fifty four percent of the males and 47.5% of the females visited the dentist within the last 12 months. On the other hand, 45.5% of the males and 52.5% of the females made a visit to the dentist more than 12 months ago (n = 698). Most males and females (88.4%) indicated that they do pay their own dental fees and only 11.6% do not (n = 699).

A greater proportion of females (51.5%) than males (48.1%) thought that the dental fees are affordable, and more males (10.2%) than females (9.3%) thought it is cheap (n = 677). More than a third of the sample thought the dental fees cost too much (31.5%).

Table 7- Sex and Utilisation (%)

	Place of visit			Time of visit		Last visit		Pay fees		Fees are		
Sex	Priv.	Pub.	Both	Only when in trouble	When not in trouble	<12 months	>12 months	Yes	No	Afforda ble	Cheap	Cost too much
Male	25.2	65.3	9.2	67.3	32.3	54.4	45.5	89.6	10.4	48.1	10.2	31.6
Female	23.2	69.9	6.9	66.8	33.2	47.5	52.5	87.3	12.7	51.5	9.3	31.3
All	24.3	67.7	8.0	67.0	33.0	50.8	49.2	88.4	11.6	58.8	9.7	31.5

Race

For the two races in the sample (n = 695), more Fijians use the public dental service (69.1%) than Indians (65.8%). However, approximately the same proportion of the two races use the private practice being 24.9% for Fijians and 24.3% for Indians. Furthermore, 9.9% Indians and 6.0% Fijians use both the private and public dental services **(Table 8)**.

When asked how often they visit the dentist (n = 702), 71.9% of Fijians and 61.0% of the Indians visit the dentist only when there is a dental problem. Only 28.1% of Fijians but 39.0% of Indians visited the dentist **(Figure 13)** even when they do not have a dental problem ($p < 0.05$).

More than half (53.0%) of the Indians visit the dentist within the last 12 months whereas less than half (49.1%) of the Fijians visit the dentist during the same period (n = 694).

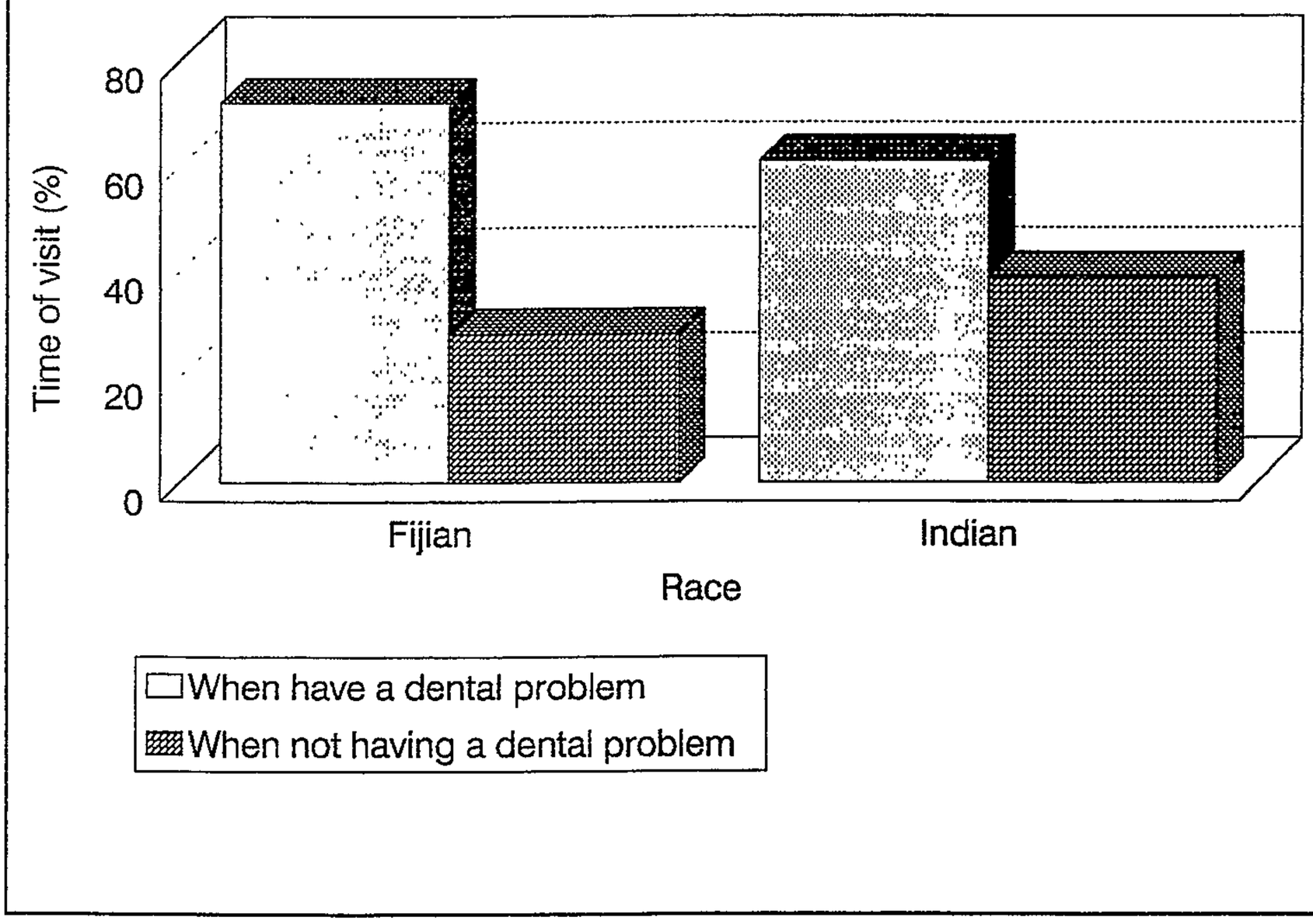
Both races (88.3%) indicated that they pay for their own dental fees (n = 694). While 62.4% of Fijians thought that the dental fees are affordable, nearly a third (29.3%) also indicated that it cost too much. Just over half of the Indians thought the dental fees are affordable (54.2%) whereas more than a third (34.5%) said it cost too much.

Table 8 - Race and Utilisation (%)

	Place of visit			Time of visit*		Last visit		Pay fees		Fees are		
Race	Priv.	Pub.	Both	Only when in trouble	When not in trouble	< 12 months	>12 months	Yes	No	Affor dable	Cheap	Cost too muh
Fijians	24.9	69.1	6.0	71.9	28.1	49.1	50.9	88.9	11.1	62.4	8.3	29.3
Indians	24.3	65.8	9.9	61.0	39.0	53.0	46.9	87.6	12.4	54.2	11.3	34.5
All	24.6	67.6	7.8	67.0	33.0	50.9	49.1	88.3	11.7	58.6	9.7	31.7

* $p < 0.05$

Figure 13 - Race and time of visit



Income

As the income increases the proportion of the sample (n = 656) that visit the private practice increases **(Figure 14)**; 10.5% of the low income group, 27.9% of the medium income earners and 39.0% in the high income group visited the private practice. Conversely, as the income increases, the proportion that use the public dental services decreases; 85.1% of the low income, 62.6% of the medium income group and 49.1% from the high income category ($p < 0.001$). When asked how often they (n = 663) visit the dentist, 62.0% of the low income group, 66.1% of the medium income group and 71.5% of the high income group indicated they visited the dentist only when there is a dental problem. This showed that as income increases the proportion of those visiting the dentist only when having a problem increases.

On their last visit a greater proportion of the medium income earners (56.0%) visited within the last 12 months **(Figure 15)**, while 53.6% of the high income group and 45.7% of the low income group visited the dentist within the same time period ($p < 0.05$).

The proportion of those who paid for their own dental fees increases as the income increases as shown on **Table 9**, however a greater proportion from the medium income perceive that the dental fees is affordable and do not cost too much.

Table 9 - Income and Utilisation (%)

	Place of visit***			Time of visit		Last visit*		Pay fees		Fees are		
income	Priv.	Pub.	Both	Only when in trouble	When not in trouble	<12 months	>12 months	Yes	No	Afford able	Cheap	Cost too much
Low	10.5	85.1	4.4	62.0	38.0	45.7	54.3	88.8	11.2	57.7	7.3	35.0
Medium	27.9	62.6	9.5	66.1	33.9	56.0	44.0	89.4	10.6	60.0	10.3	29.7
High	39.0	49.1	11.9	71.5	28.5	53.6	46.4	90.8	9.2	55.8	12.9	31.3
All	25.0	66.6	8.4	66.4	33.6	51.3	48.7	89.6	10.4	57.7	10.1	32.2

* p < 0.05 *** p < 0.001

Figure 14 - Income and place of visit

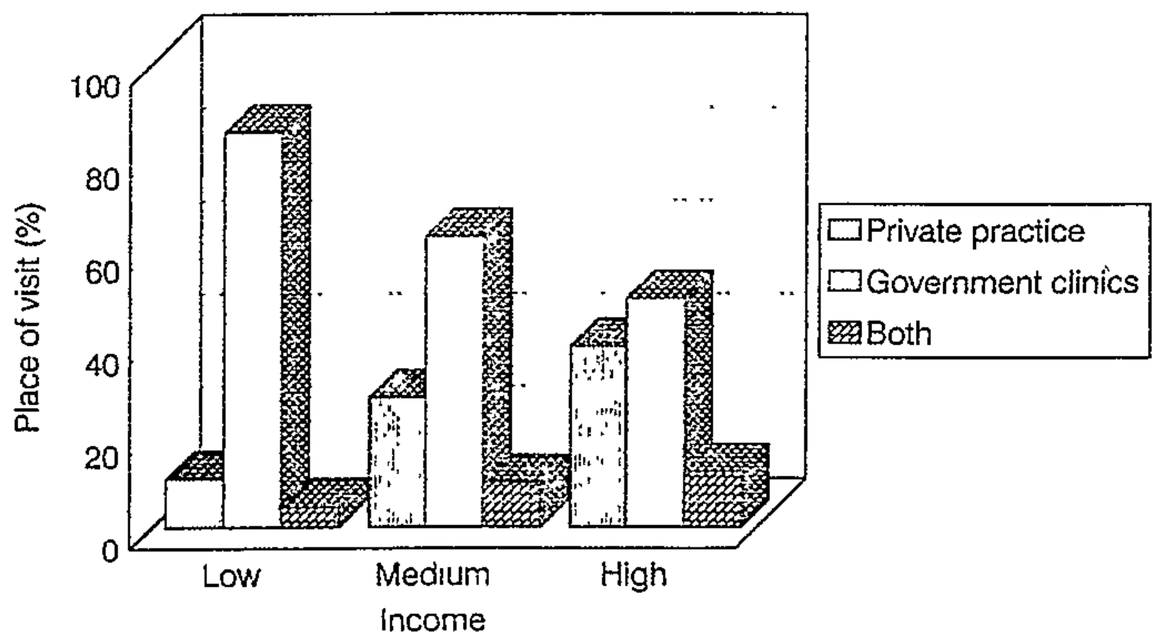
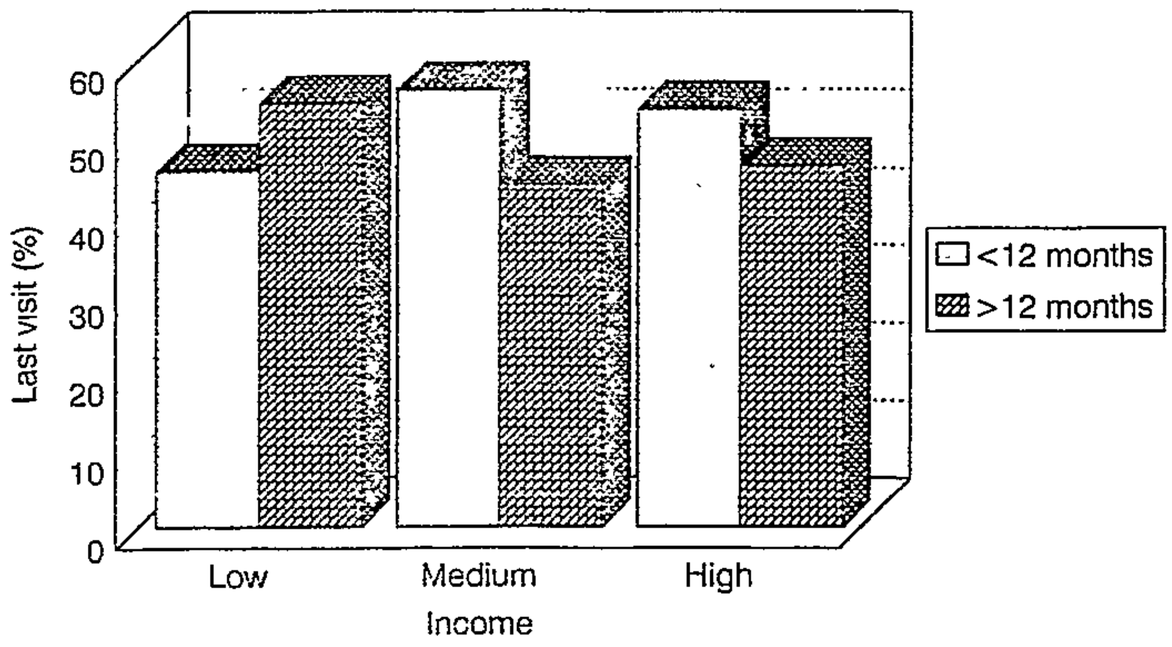


Figure 15 - Income and last visit



Occupation

Occupation was measured individually. As shown on **Table 10** and **Figure 16**, with a sample of n = 651 those in the professional occupation (40.0%) use the private practise more than the other two occupations. The unemployed (78.5%) use the public dental service more than the other two occupations ($p < 0.001$). Overall, 67.3% of the three occupations visit the dentist only when they have a dental problem while 32.7% visit the dentist even when they do not have a dental problem (n = 658). More than half of the respondents from the professional (54.2%) and non professional group (53.2%) visited a dentist within the last 12 months whereas less than half of the unemployed (41.6%) visited the dentist within the last 12 months. For those in the professional occupation 93.5% do pay for their own fees and only 80.4% of the unemployed pay for their fees (n = 650) and ($p < 0.001$) **(Figure 17)**. The unemployed (62.5%) thought that the dental fees are affordable. Only 54.8% of the non professional occupation reckons that the dental fees are affordable while more than a third (34.6%) thought it is too much.

Table 10 - Occupation and Utilisation (%)

	Place of visit***			Time of visit		Last visit		Pay fees***		Fees are		
Occupation	Priv.	Pub.	Both	Only when in trouble	When not in trouble	<12 months	>12 months	Yes	No	Affor dable	Cheap	Too much
Professional	40.0	50.0	10.0	68.5	31.5	54.2	45.8	93.5	6.5	60.1	8.0	31.9
Non Professional	23.2	69.6	7.2	66.6	33.4	53.2	46.8	89.8	10.2	54.8	10.7	34.6
Unemployed	13.4	78.5	8.1	68.0	32.0	41.6	58.4	80.4	19.6	62.5	10.4	27.1
All	24.6	67.4	8.0	67.3	32.7	50.8	49.2	88.5	11.5	57.7	10.0	32.3

*** p< 0.001

Figure 16 - Occupation and place of visit

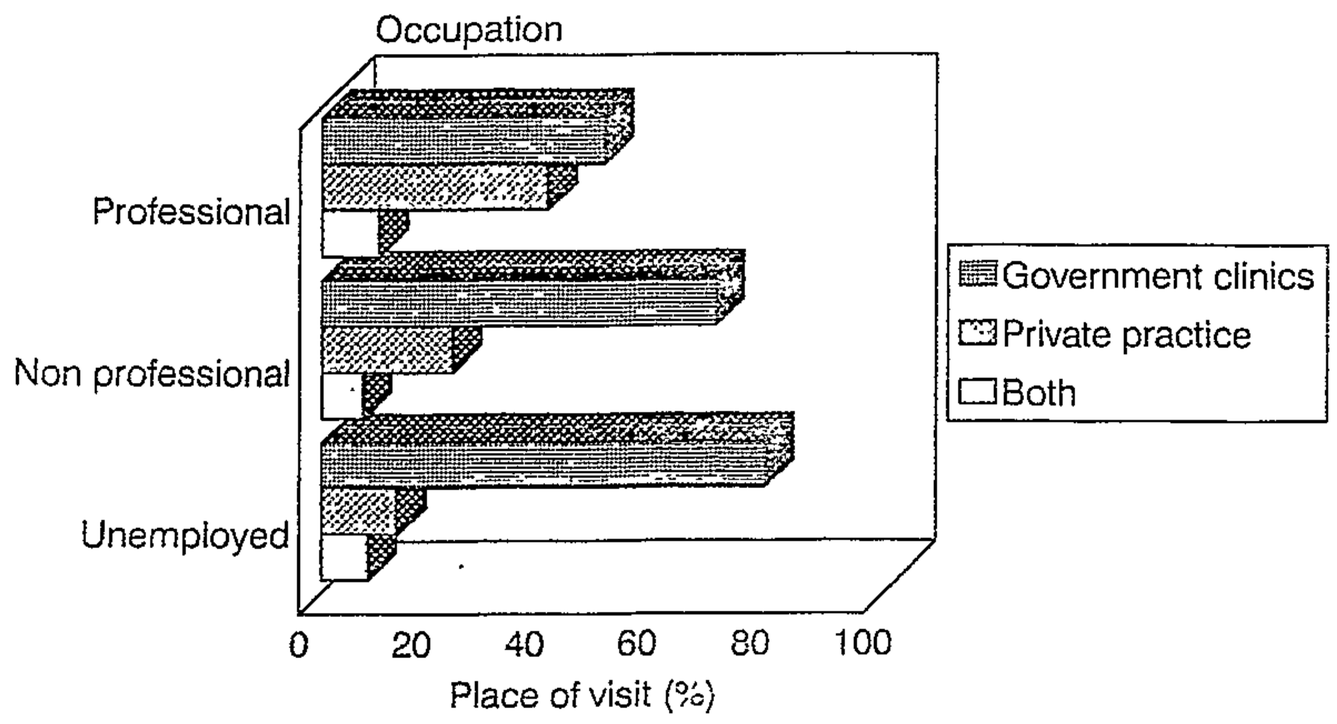
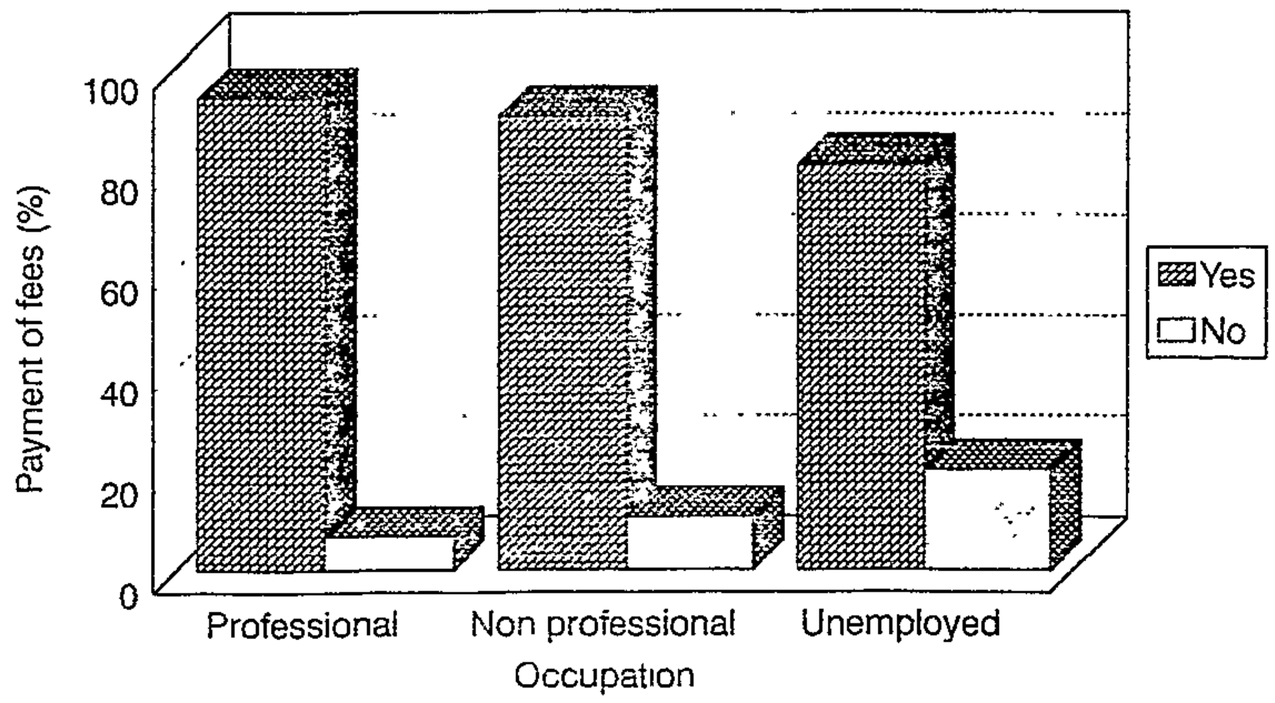


Figure 17 - Occupation and payment of fees



Education

The proportion of those who visited the private, public and both the private and public dental practice increases as level of education increases respectively (n = 695). A majority of those who had no/primary education use the public dental services (84.8%) compared to those who receive tertiary education (54.4%). The association of education to the place visited was significant at $p < 0.001$.

Across the three education category there was no difference on when they visited the dentist. About 66.7% of all, visited only when there is a dental problem and 33.3% when there is not a dental problem.

As the education level increases from no/primary education, secondary to tertiary so does the proportion of those that indicated visiting the dentist within the last 12 months. As seen from **Table 11**, 39.2% from the no/primary education, 50.6% of secondary education and 58.3% of the tertiary education visited the dentist within the last 12 months. Therefore 60.8%, 49.4% and 41.7% of the no/primary, secondary and tertiary education visited the dentist more than 12 months ago respectively ($p < 0.05$).

The respondents (n = 672) who indicated paying for their own fees was 88.3% while 11.7% do not. Both the no/primary education and tertiary education group has a lesser proportion 52.9%, 55.2% respectively indicating that the fees are affordable. A greater proportion of the no/primary and tertiary education group indicate that it cost too much (37.2%) and (35.5%) respectively. The secondary education group (62.9%) indicated that it is affordable and does not cost too much (26.7%) **Table 11**.

Table 11- Education and Utilisation (%)

	Place of visit***			Time of visit		Last visit*		Pay fees		Fees are		
Education	Priv.	Pub.	Both	Only when in trouble	When not in trouble	<12 months	>12 months	Yes	No	Afford able	Cheap	Too much
None Primary	12.8	84.8	2.4	64.6	35.4	39.2	60.8	82.5	17.5	52.9	9.9	37.2
Secondary	22.5	69.0	8.5	67.2	32.8	50.6	49.4	89.8	10.2	62.9	10.3	26.7
Tertiary	35.0	54.4	10.7	67.0	33.0	58.3	41.7	89.3	10.7	55.2	9.4	35.5
All	24.5	67.5	8.1	66.7	33.3	51.0	49.0	88.3	11.7	58.8	10.0	31.3

* $p < 0.05$ *** $p < 0.001$

Figure 18 - Education and place of visit

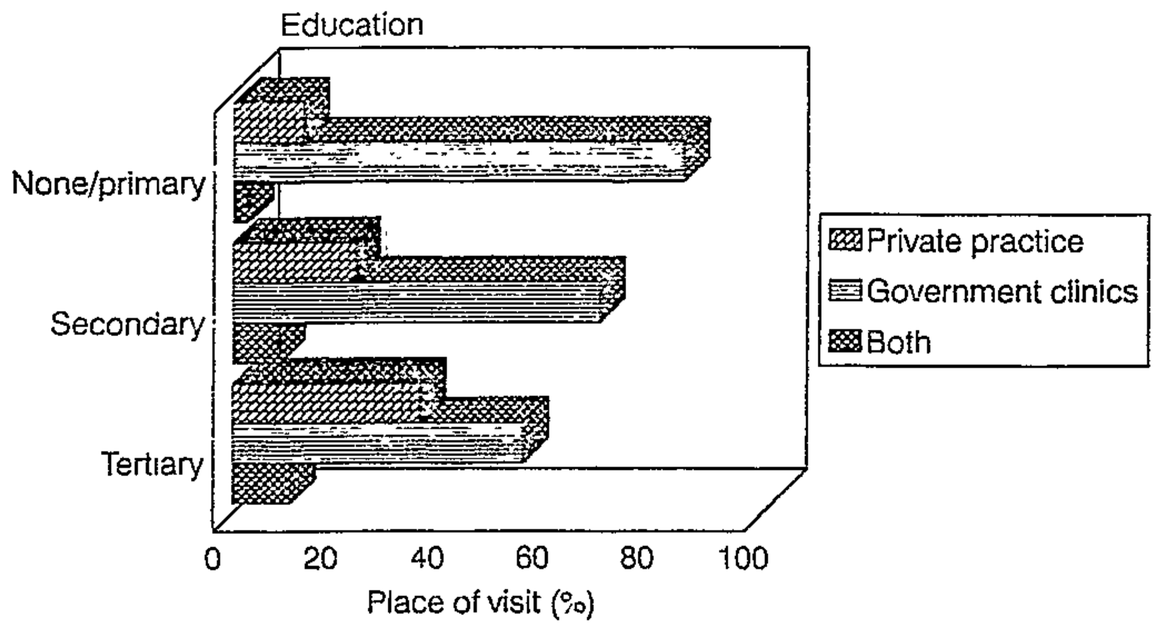
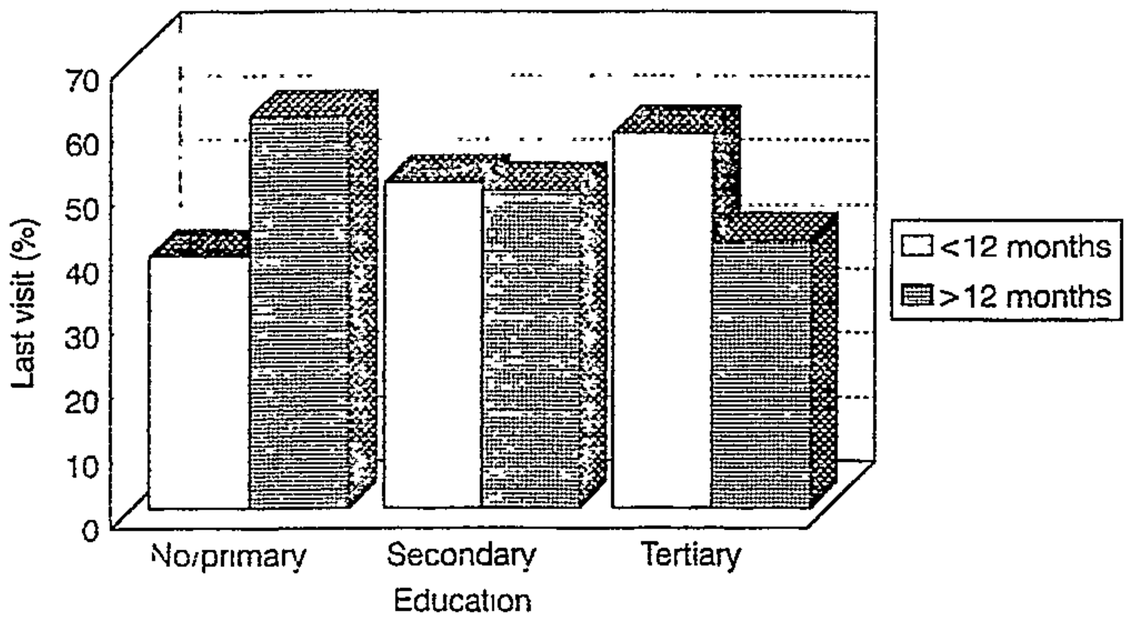


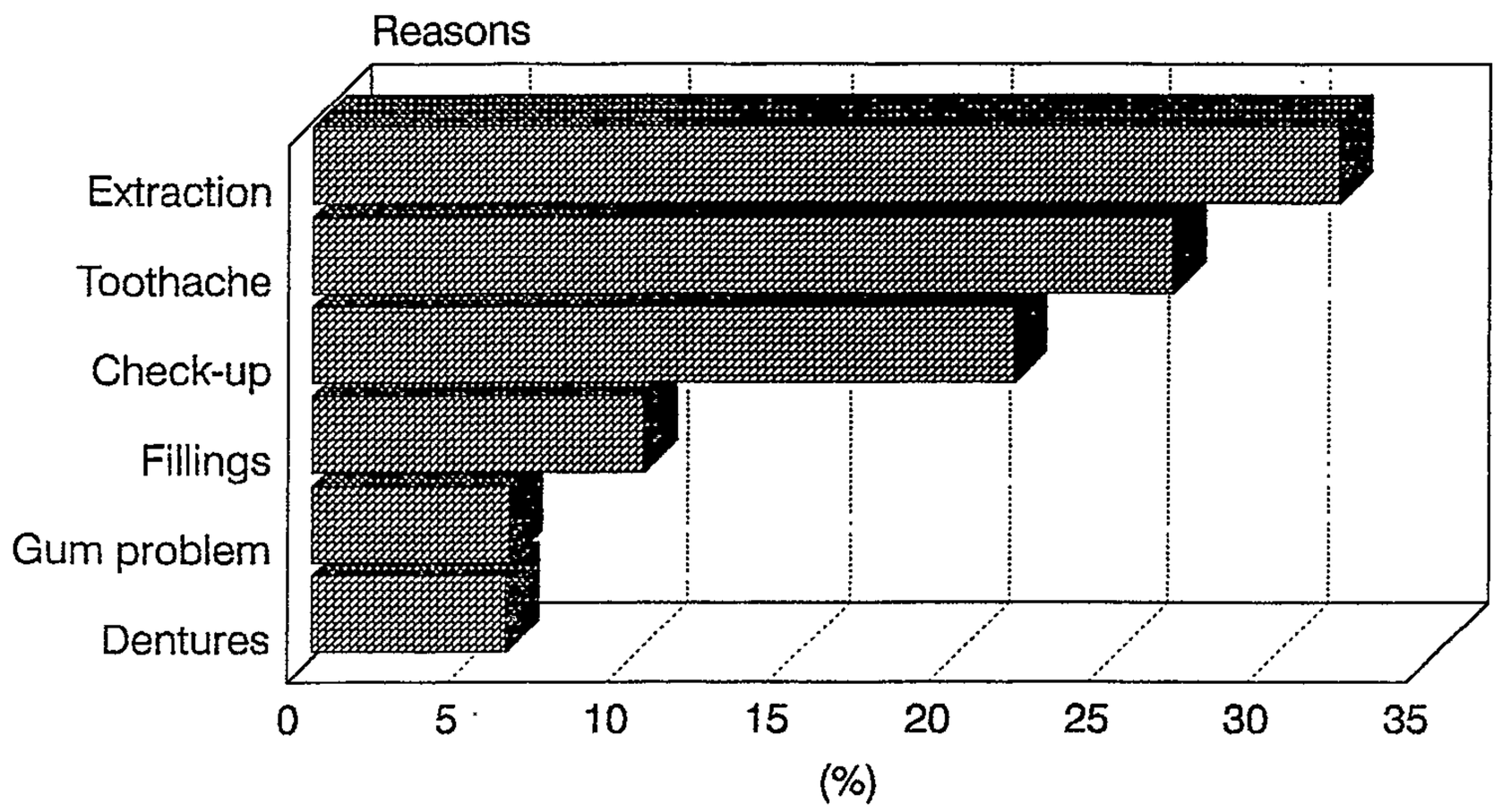
Figure 19 - Education and last visit



Reasons for visit/no visit to the dentist

Visiting a dentist is related to a dental problem which is facing an individual. Therefore, for those individual who visited the dentist, 32.1% indicated that their last visit was for extraction and 26.9% had a toothache. The percentage of individuals who went for check-up is 21.9%, 6.2% visited the dentist because they had a gum problem, 6.1% for dentures and 10.4% for fillings **(Figure 20)**.

Figure 20 - Reasons for visiting the dentist (within the last 12 months)



'Nothing wrong' was the most popular reason (81.6%) for not visiting the dentist within the last 12 months. The rest of the reasons are shown on **Table 12**.

Table 12 - Reasons for not visiting the dentist within the last 12 months

Reasons	Percentage
Nothing wrong	81.6
Was too busy	6.7
Afraid of dentist	4.1
Have false teeth/no teeth	3.0
Can't afford	2.8
No service available	0.9

The form of transport for dental visits

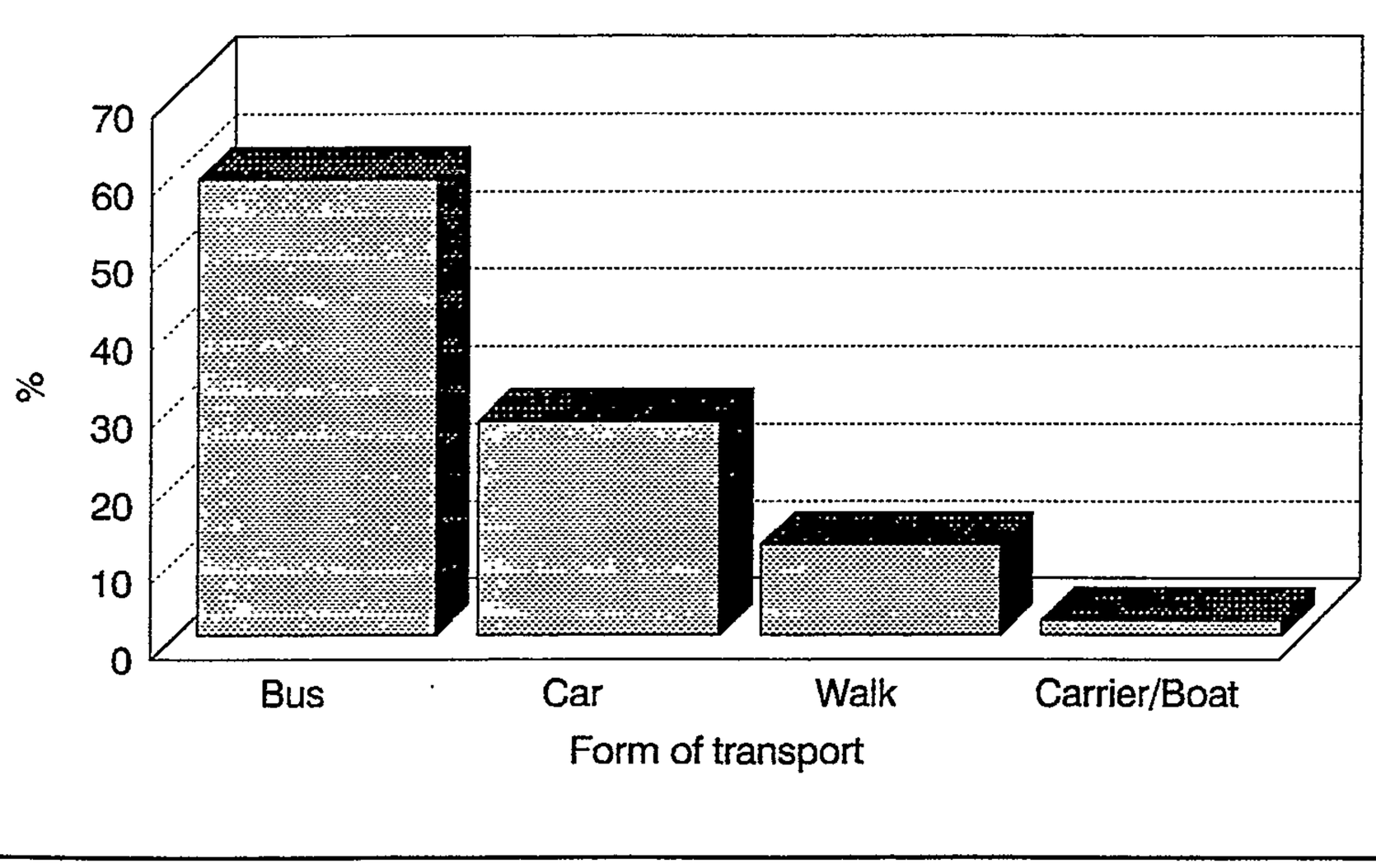
The most common form of transport when visiting the dentist indicated by the respondents is by the public bus (58.8%). Some of the respondents also travel by car (27.6%) or simply walk to the nearest dental clinic (11.7%). A minority group (1.9%) travel by boat or the carrier (van) **(Table 13 and Figure 21)**.

Table 13 - Form of transport for dental visits

Transport	Percentage
Bus	58.8
Car	27.6
Walk	11.7
Other*	1.9

* Carrier/Boat

Figure 21 - Form of transport for dental visits



2.2.4.3 Behaviour and attitude

Age vs Behaviour and Attitude

When each age group in **Table 14** (n = 641) were asked whether they needed treatment, overwhelmingly, 74.8% in all the group indicated they indeed need treatment. However, in the presence of a dental problem, 52.8% of the < 30 age-group and 51.0% of the 31-40 age group seek care at the same time. Comparatively, more of the < 30 year-olds (19.0%) than the 31-40 year-olds (15.1%) seek dental care a few days later. The > 41 year-old age group, overwhelmingly seek dental care at the same time (62.6%) when they are faced with a dental problem.

Again, in all the age group sample of n = 656, 95.6% use fluoride toothpaste; the < 31 age group have a slightly higher proportion being 96.3% who use fluoride toothpaste.

Although less than a third of each of the age group indicated that they do fear the dentist (24.6% of < 30 year-olds, 21.9% of 31-40 year-olds and 23.8% of > 40 year-olds), a higher proportion of the < 30 age group (12.7%) indicated that maybe they fear the dentist ($p < 0.05$) **(Figure 22)**.

Accordingly, less than a third (23.2%) of those who responded on the question of how confident they are at the present time in visiting the dentist (n = 652) indicated they are unsure. Again, the < 30 year-olds showed a higher proportion of 28.3% than the other two age groups.

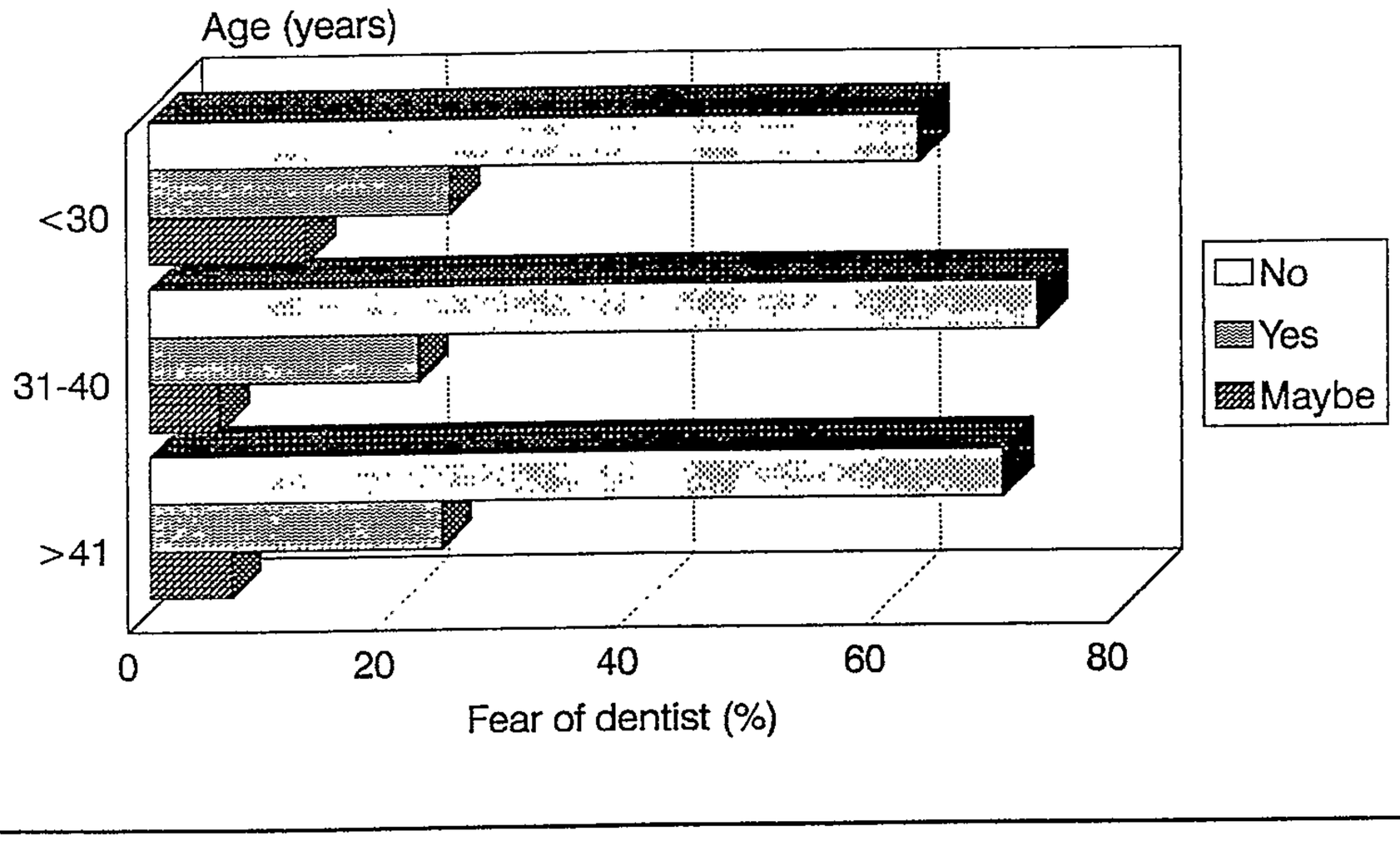
Overall, there is a general satisfaction in the adult sample of n = 645, about the appearance of their natural teeth (86%); only 14% are dissatisfied.

Table 14 - Age vs Behaviour and Attitude (%)

	Need Tx		Seek dental Tx			Use fluoride T/Paste		Fear of dentist*			Confidence		Satisfaction	
Age (years)	Yes	No	Same time	Days later	Can't bear the pain	Yes	No	Yes	No	Maybe	Unsure	Confident	Satisfied	Dissatisfied
<30	78.3	21 7	52 8	19.0	28.1	96.3	3.7	24.6	62.7	12.7	28.3	71.7	86.4	13 6
31-40	73 9	26.1	51 0	15.1	33 9	95.4	4.6	21.9	72.5	5.6	19.6	80.4	85.8	14.2
>41	71.3	28 7	62 6	14 0	23.4	94.8	5.2	23.8	69.6	6.5	21 1	78.9	85.8	14 2
All	74.8	25 2	54.8	16.2	29 0	95.6	4.4	23.4	68.1	8.5	23.2	76.8	86.0	14 0

* $p < 0.05$

Figure 22 - Age vs fear of dentist



Sex vs Behaviour and Attitude

From **Table 15** with n = 701 it is evident that more than 70% of males and females need dental treatment. However, more males (78.3%) than females (72.9%) perceived the need for dental treatment.

Also from **Table 15** and **Figure 23** n = 679, more females visited the dentist at the same time when there is a dental problem (60.2%) than males (49.4%). In comparison to the female gender (23.8%), more males (35.2%) waited until they cannot bear the dental pain ($p < 0.01$).

About 95% of both gender use fluoride toothpaste (n = 693).

Less than a third (23.6%) of both sexes in the sample of n = 675, indicated that they fear the dentist, however, more of the male gender (10%) also indicated that maybe they fear the dentist as compared to the 7.5% of the response from the females.

It appears in **Figure 24** that females are more confident at the present time if they were to visit the dentist (78.6%) than males (74.5%) ($p < 0.05$).

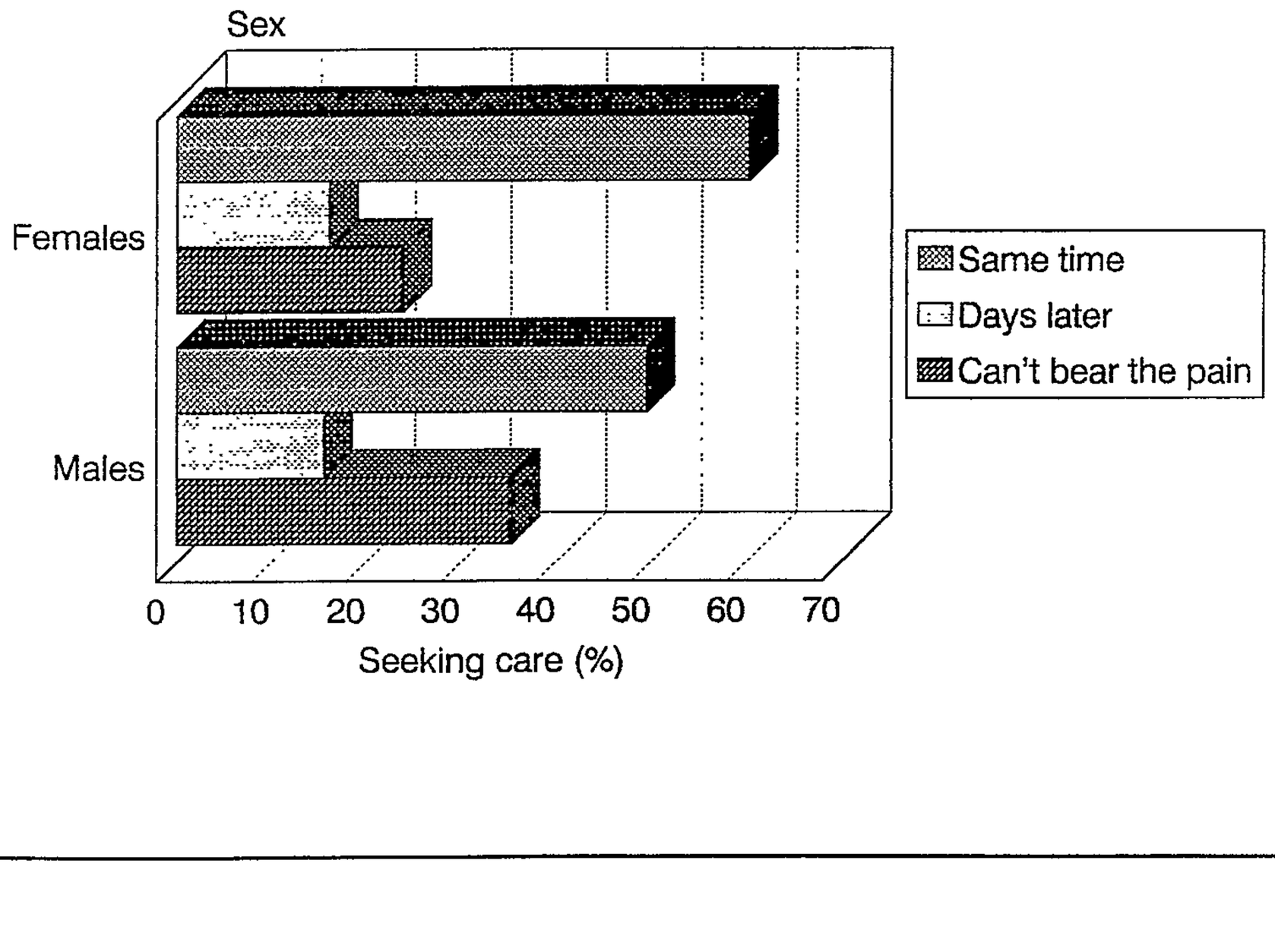
Consequently, more females (89.2%) are satisfied with the appearance of their teeth n = 681 **(Figure 25)**, whereas fewer males (82.2%) are satisfied with the appearance their teeth ($p < 0.01$).

Table 15 - Sex vs Behaviour and Attitude (%)

	Need Tx		Seek dental care**			Use fluoride T/Paste		Fear of dentist			Confidence*		Satisfaction**	
Sex	Yes	No	Same time	Days later	Can't bear pain	Yes	No	Yes	No	Maybe	Unsure	Confident	Satisfied	Dissatisfied
Male	78.3	21 7	49.4	15.5	35.2	94.9	5.1	25.8	64.1	10.0	25.5	74.5	82.2	17 8
Female	72.9	27 1	60 2	16 0	23.8	95.9	4.1	21.4	71.1	7.5	21.4	78.6	89 2	10.8
All	75.5	24.5	54.9	15.8	29.3	95.4	4.6	23.6	67.7	8.7	23.4	76.6	85 8	14 2

* p< 0.05 ** p < 0.01

Figure 23 - Sex vs Seeking dental care



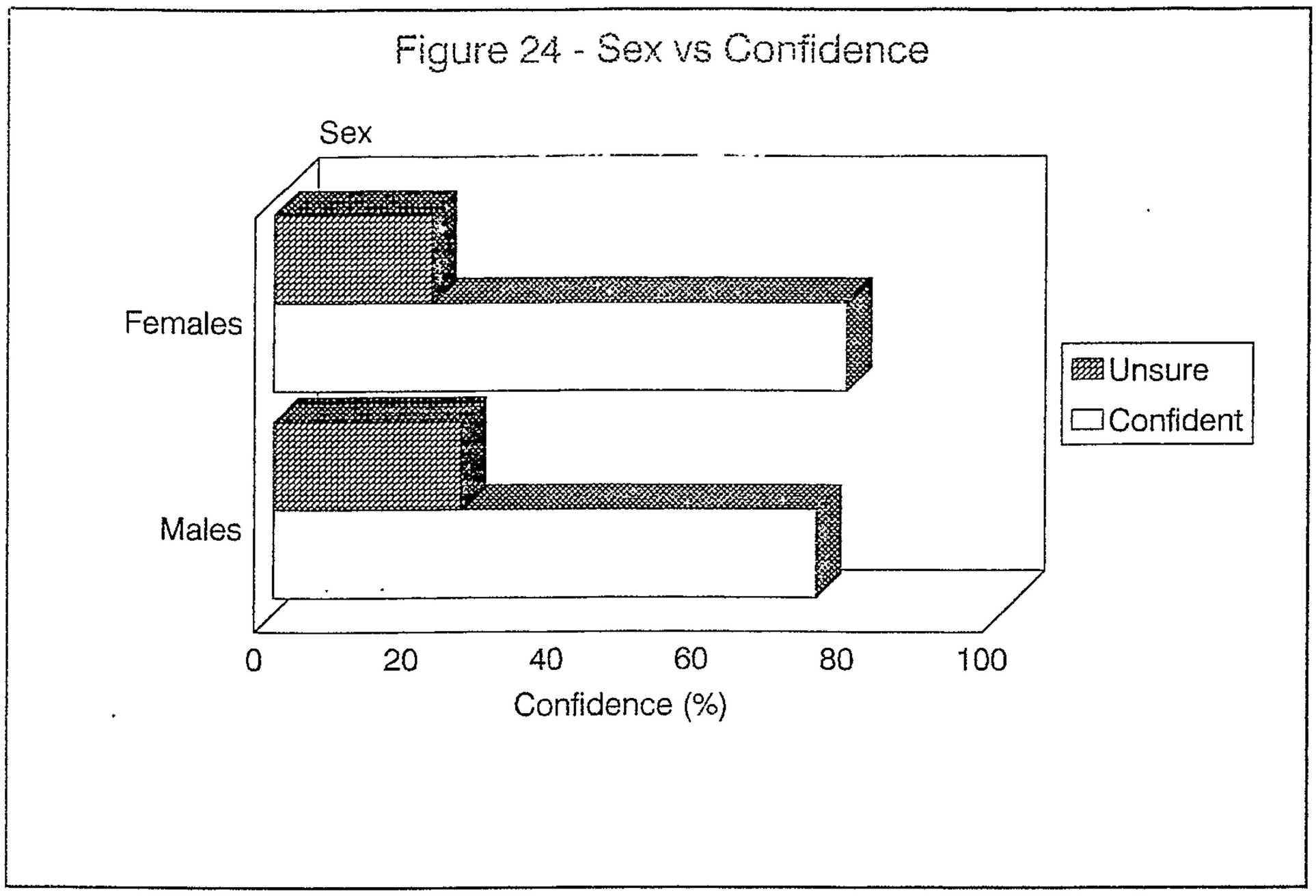


Figure 24 - Sex vs Confidence

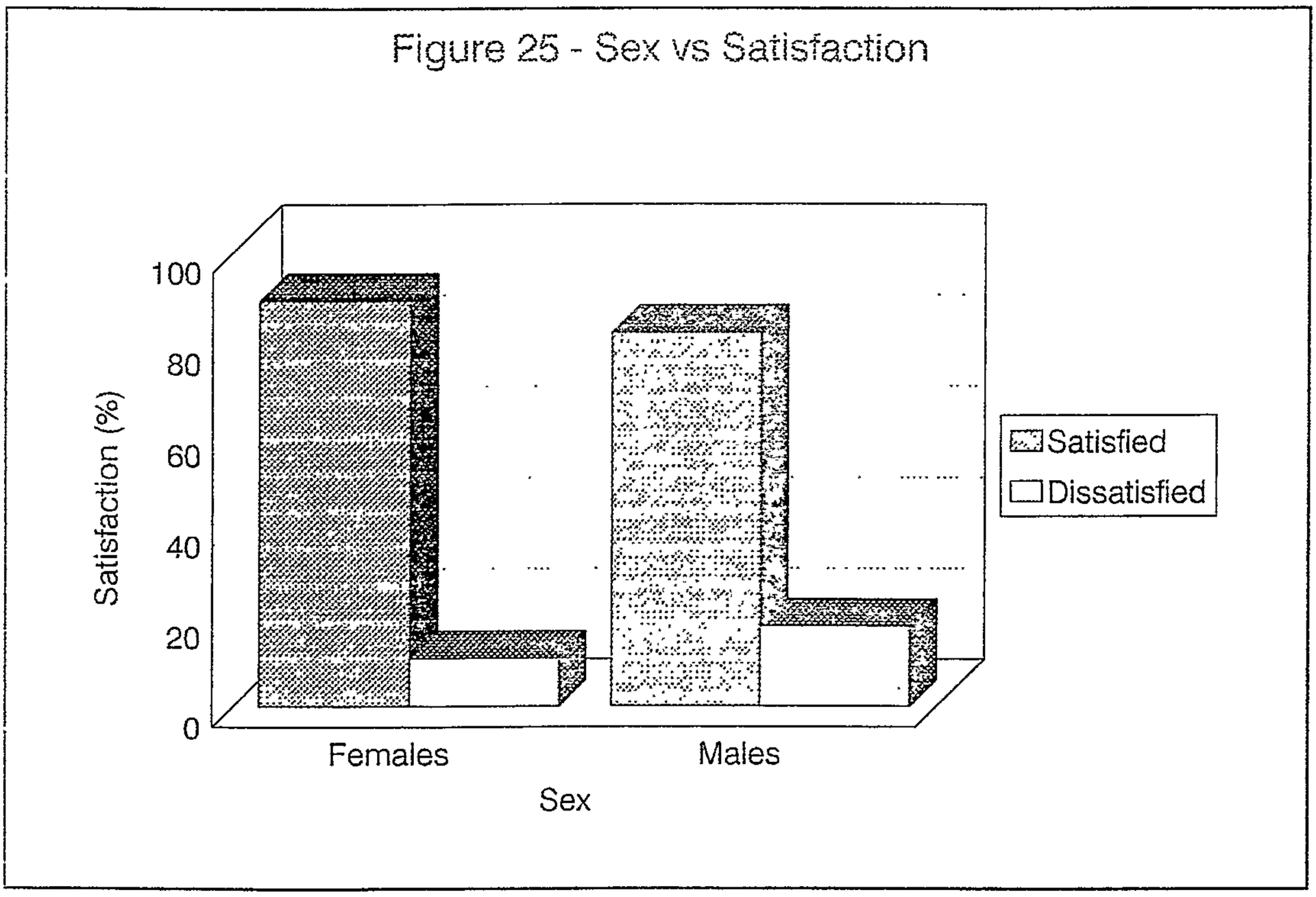


Figure 25 - Sex vs Satisfaction

Race vs Behaviour and Attitude

As shown on **Table 16** and **Figure 26** from a sample of n = 696, more Fijians indicated that they need dental treatment (79%) as compared to 71.4% of the Indians ($p < 0.05$). In **Figure 27** about 55% of both Fijians and Indians seek dental treatment at the same time (n = 674), however, more Indians (20.1%) go for dental treatment a few days later compared to Fijians (12.3%). More Fijians (32.1%) appeared to wait until they cannot bear the pain than Indians (23.8%) ($p < 0.01$).

More than 95% of both Fijians and Indians use fluoride toothpaste (n = 688).

Fear of the dentist was observed to be greater for Fijians for 25.8% indicated that they do and 10% indicated that maybe they fear the dentist (n = 671). A lesser proportion of Indians 21.8% said that they do fear the dentist while 7.5% said that maybe they fear the dentist.

Both races indicate that 76.4% are confident at the present time to visit the dentist while 23.6% are still unsure. Indians (87.9%) reported they are satisfied with their teeth compared to 83.7% of Fijians (n = 676).

Table 16 - Race vs Behaviour and Attitude (%)

	Need Tx*		Seek dental care**			Use Fluoride T/Paste		Fear of dentist			Confidence		Satisfaction	
Race	Yes	No	Same time	Days later	Can't bear pain	Yes	No	Yes	No	Maybe	Unsure	Confident	Satisfied	Dissatisfied
Fijian	79.0	21.0	55.6	12.3	32.1	94.9	5.1	24.8	65.8	9.4	23.6	76.4	83 7	16.3
Indian	71.4	28.6	54 4	20 1	25.6	95.8	4.2	21.8	70.5	7.8	23.6	76.4	87 9	12.1
All	75 6	24.4	55 0	15 9	29 1	95.3	4.7	23.4	68.0	8.6	23.6	76.4	85 7	14.3

* $p < 0.05$ ** $p < 0.01$

Figure 26 - Race vs Need treatment

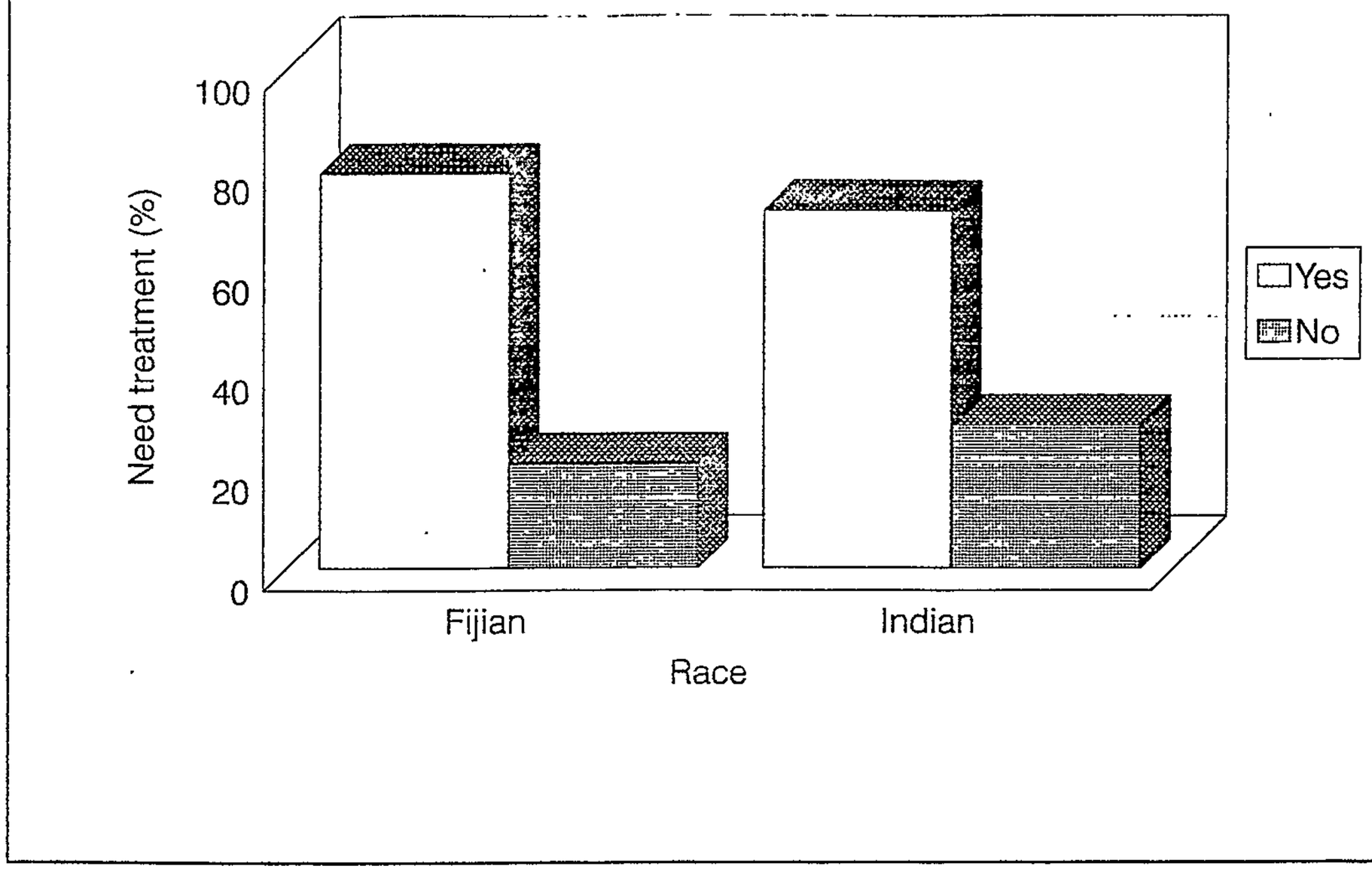
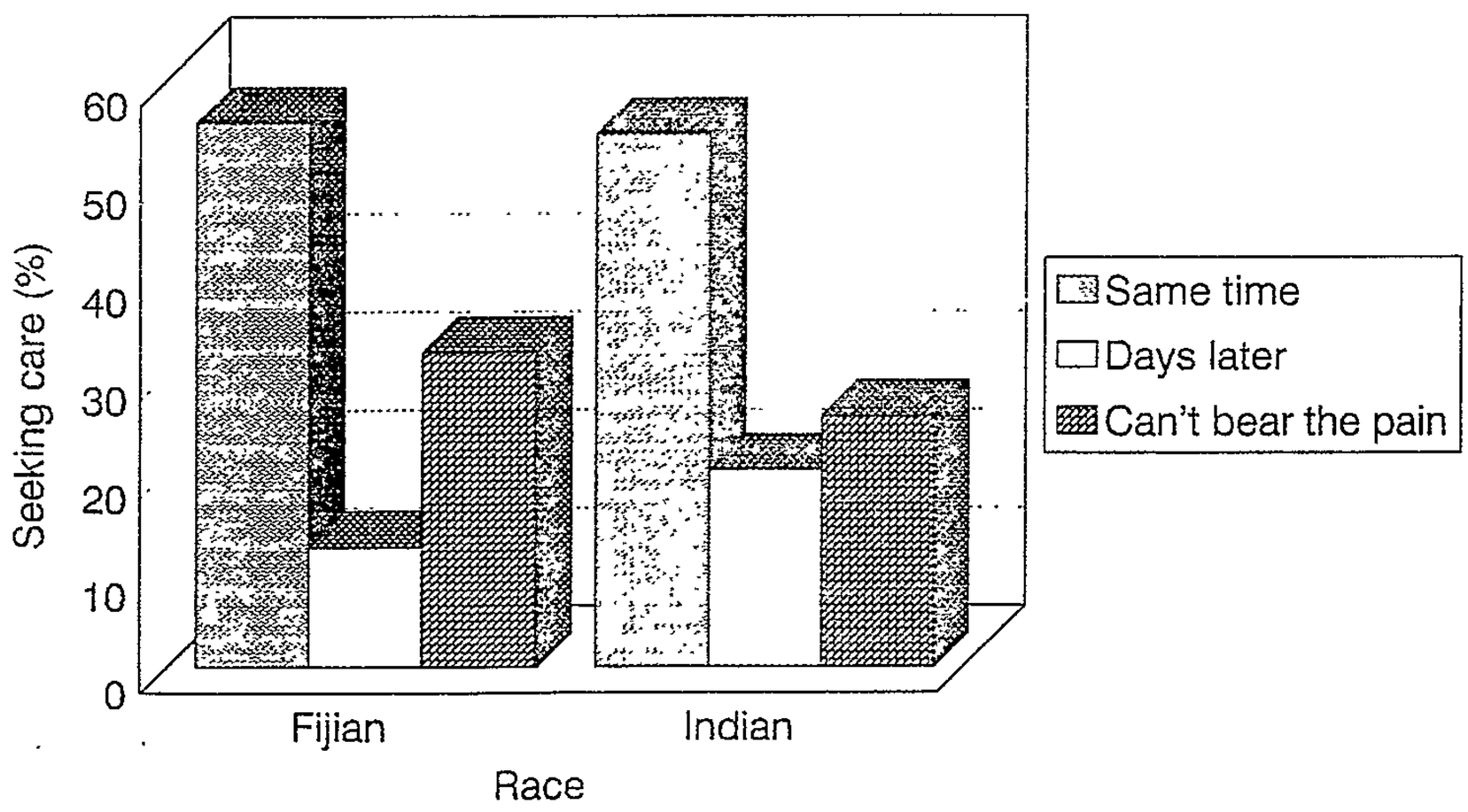


Figure 27 - Race vs Seeking care



Income vs Behaviour and Attitude

Some 76.9% of the low income group and 77% of the medium income group felt they needed treatment (n = 657). But when faced with a dental problem, more of the high income group (56%) seek dental care at the same time or a few days later. The low (29.9%) and medium (30.6%) income group tend to wait until they cannot bear the pain.

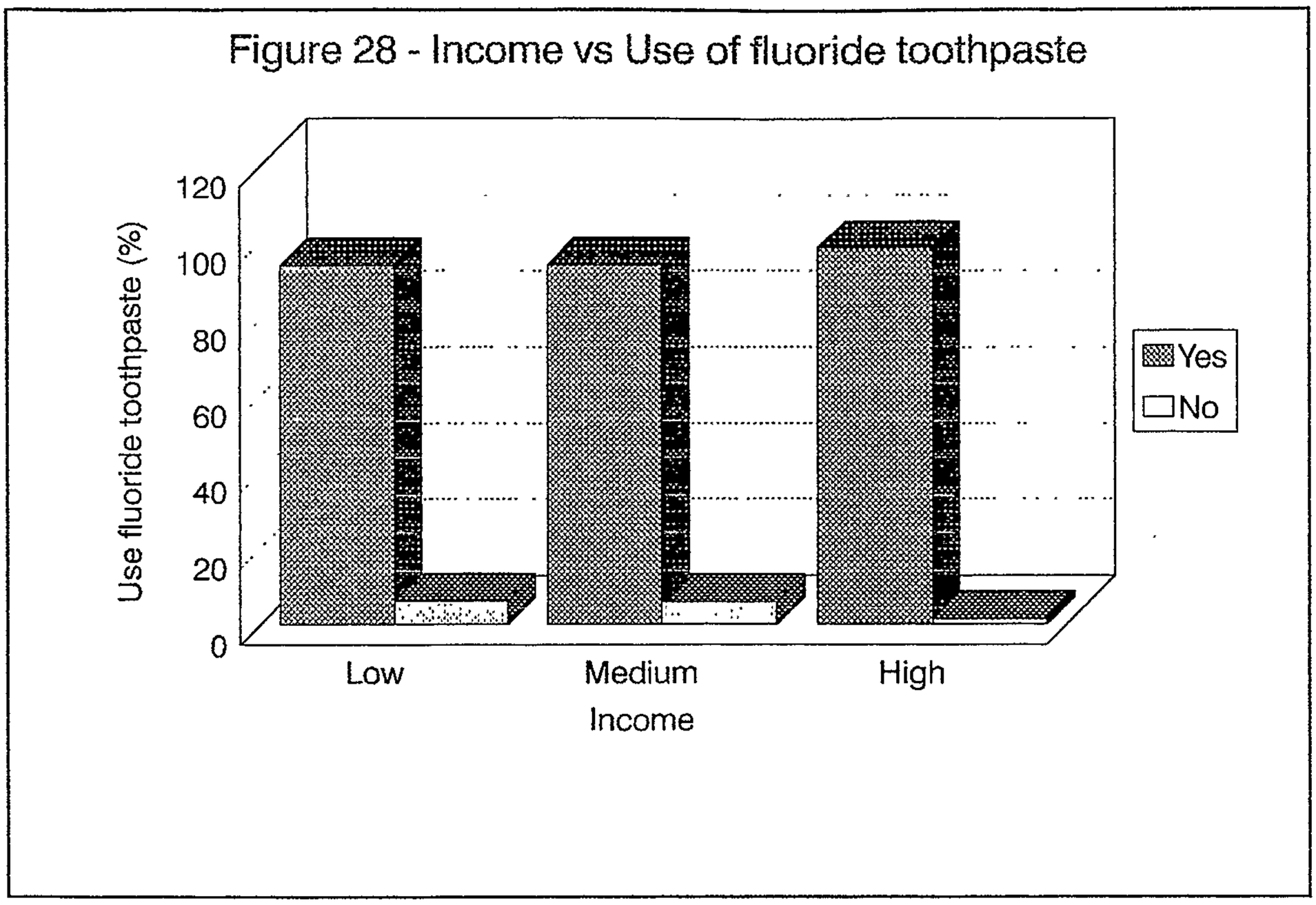
While 98.6% of the high income group use fluoride toothpaste, only 93.9% of the low income group use fluoride toothpaste ($p < 0.05$).

It is shown in **Table 17** that a greater proportion of the low income group (28.8%) do fear the dentist, and compared to the other two income groups more of the medium income group indicated that maybe they do fear the dentist. When asked about how confident they are in visiting the dentist (n = 644),a greater proportion (25.3%) of the low income group showed they are unsure, but the medium income group (79%) are more confident ($p < 0.05$) **(Figure 28)**. The high income group (89.4%) are more satisfied with the appearance of their teeth than the low (83.1%) and medium (85.2%) groups (n = 644).

Table 17 - Income vs Behaviour and Attitude (%)

	Need Tx		Seek dental care			Use Fluoride T/Paste*		Fear			Confidence*		Satisfaction	
Income	Yes	No	Same time	Days later	Can't bear pain	Yes	No	Yes	No	Maybe	Unsure	Confident	Satisfied	Dissatisfied
Low	76.9	23.1	53 9	16.2	29.9	93.9	6.1	28.8	64.4	6.9	25.3	74.7	83.1	16.9
Medium	77.0	23.0	55 0	14.4	30.6	94.1	5.9	19.0	70.7	10.3	21.0	79.0	85.2	14 8
High	73 5	26.5	56 0	17.6	26 4	98.6	1 4	20.0	71.6	8.4	23.5	76.5	89.4	10 6
All	75 8	24 2	54 9	16.2	28.9	95.5	4 5	22.9	68.7	8.4	23.4	76.6	85 8	14.2

* $p < 0.05$



Occupation vs Behaviour and Attitude

In **Table 18**, 76.1% of the non professionals perceived that they need treatment while about 74% of the professional and unemployed thought so too (n = 653). While over 50% of all the occupations seek dental care at the same time they have a dental problem, 34.7% of the unemployed, 26.3% of the professional and 27.4% of the non professional waited until they cannot bear the pain (n = 631). In **Figure 29**, there is a higher proportion of the professional occupation (97.1%), than the unemployed (91.9%) who use fluoride toothpaste ($p < 0.05$). Nearly a third (28.1%) of the unemployed indicated that they do fear the dentist (n = 627). Only 15.9% of the professional group indicated they fear the dentist while 10.1% also indicated that maybe they do fear the dentist. Interestingly, 72.9% of the professionals but 77.2% of the unemployed are confident in visiting the

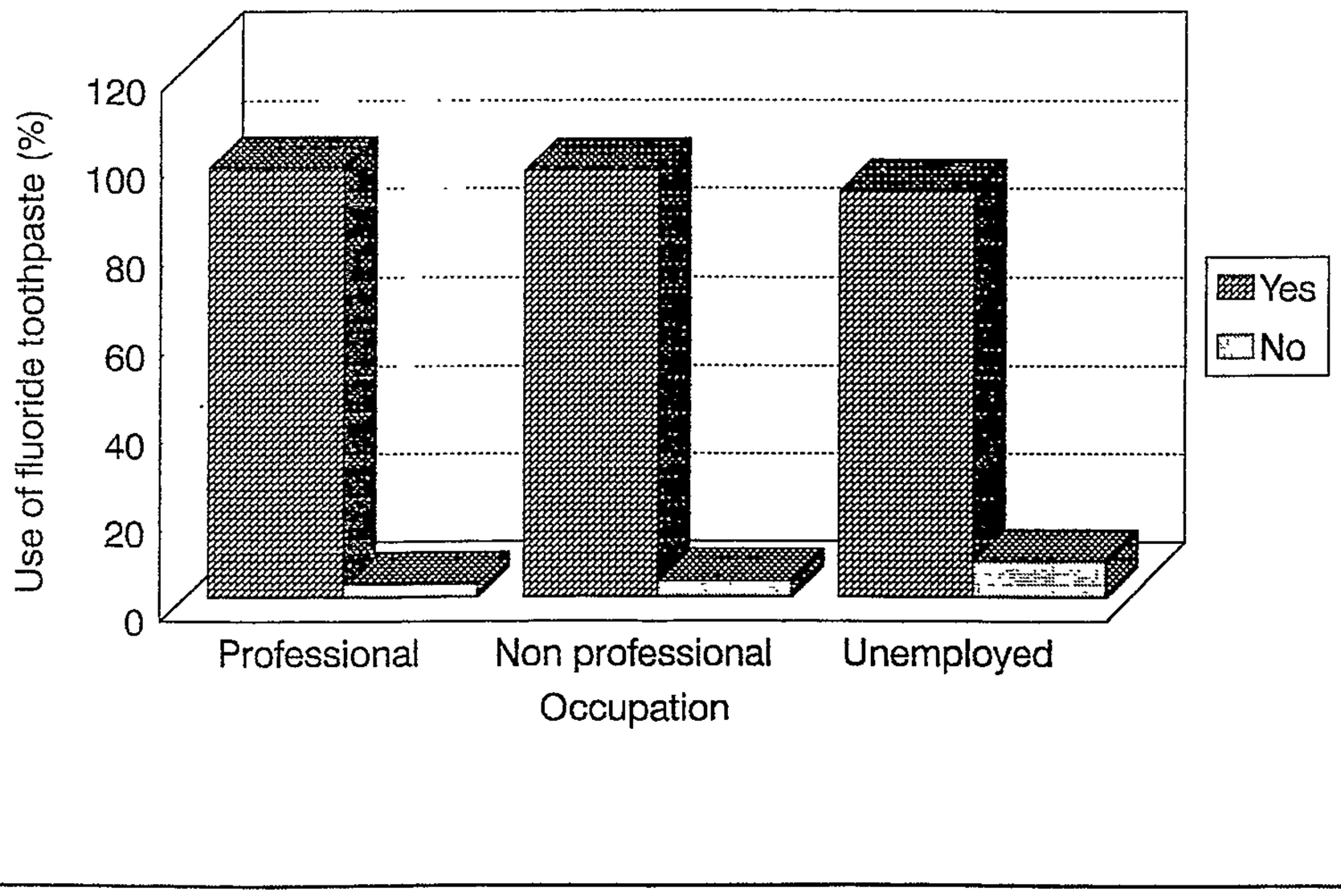
dentist (n = 638). But 90.8% of the professionals 84.3% of the non professionals and 84.5% of the unemployed are satisfied with the appearance of their natural teeth (n = 634).

Table 18 - Occupation vs Behaviour and Attitude (%)

	Need Tx		Seek dental care			Use fluoride T/Paste*		Fear dentist			Confidence		Satisfaction	
Occupation	Yes	No	Same time	Days later	Can't bear pain	Yes	No	Yes	No	Maybe	Unsure	Confident	Satisfied	Disatisfied
Professional	74 5	25 5	56 9	16 8	26 3	97.1	2.9	15.9	73 9	10.1	27 1	72.9	90 8	9.2
Non Professional	76.1	23 9	56.5	16.1	27 4	96.4	3 6	24.8	66.2	9.0	22.9	77 1	84 3	15 7
Unemployed	74.3	25 7	50 3	15 0	34 7	91.9	8.1	28.1	66.4	5.5	22 8	77.2	84.5	15 5
All	75 3	24.7	55.2	16.0	28 8	95.5	4 5	23.6	67.9	8 5	23.8	76.2	85 8	14 2

* $p < 0.05$

Figure 29 - Occupation vs Use of fluoride toothpaste



Education vs Behaviour and Attitude

From a sample of n = 696, a greater proportion of the respondents reaching secondary education indicated they need treatment (76.6%). 74.3% of the tertiary education level perceived that they need treatment.

Although more than 50% of the respondents seek care at the same time when they have a dental problem, the tertiary education group tend to seek care a few days later (19%) compared to the no/primary education group (11.2%). There is a tendency of the no/primary education group to wait until they cannot bear the pain (35.2%) while only 26% from the tertiary education group does the same.

Those respondents reaching tertiary education level, (97.1%) use fluoride toothpaste while 90.3% of the no/primary use fluoride toothpaste ($p < 0.01$) **(Figure 30)**.

As shown on **Table 19** and **Figure 31**, 35.6% of the no/primary education group indicated that they fear the dentist which is more than the tertiary education group (16.7%). But 12.3% of the tertiary education group and only 2.5% of the no/primary education group indicated that maybe they fear the dentist ($p < 0.001$).

Confidence in visiting the dentist increases as the education of the respondents increases from 74.2% for no/primary education, 76.6% of the secondary education level and 78% of the tertiary education level (n = 683). The secondary education group (87.7%) are more satisfied with the appearance of their teeth, while 82.9% of the no/primary education level indicated the same (n = 678).

Table 19 - Education vs Behaviour and Attitude (%)

	Need Tx		Seek dental care			Use fluoride T/Paste**		Fear dentist***			Confidence		Satisfaction	
Education	Yes	No	Same time	Days later	Can't bear pain	Yes	No	Yes	No	Maybe	Unsure	Confident	Satisfied	Dissatisfied
None/Primary	75 6	24 4	53 6	11.2	35.2	90 3	9.7	35.6	61.9	2.5	25.8	74.2	82 9	17 1
Secondary	76.6	23.4	55.3	15 5	29.2	96.1	3.9	23.2	67.9	8.9	23.4	76.6	87 7	12.3
Tertiary	74 3	25 7	55 0	19 0	26.0	97.1	2.9	16.7	71.1	12 3	22.0	78.0	84 3	15 7
All	75 7	24 3	54 9	15 7	29.4	95.4	4.6	23.4	67.8	8 8	23.4	76.6	85.8	14 2

** p < 0.01 *** p < 0.001

Figure 30 - Education vs Use of fluoride toothpaste

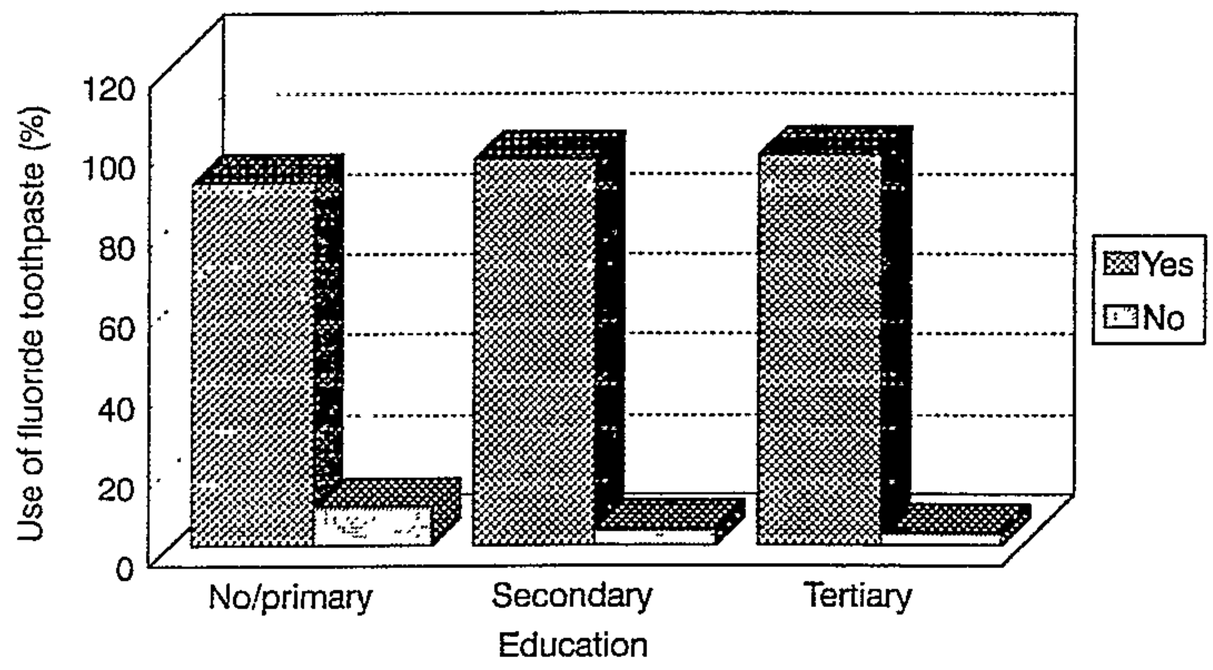
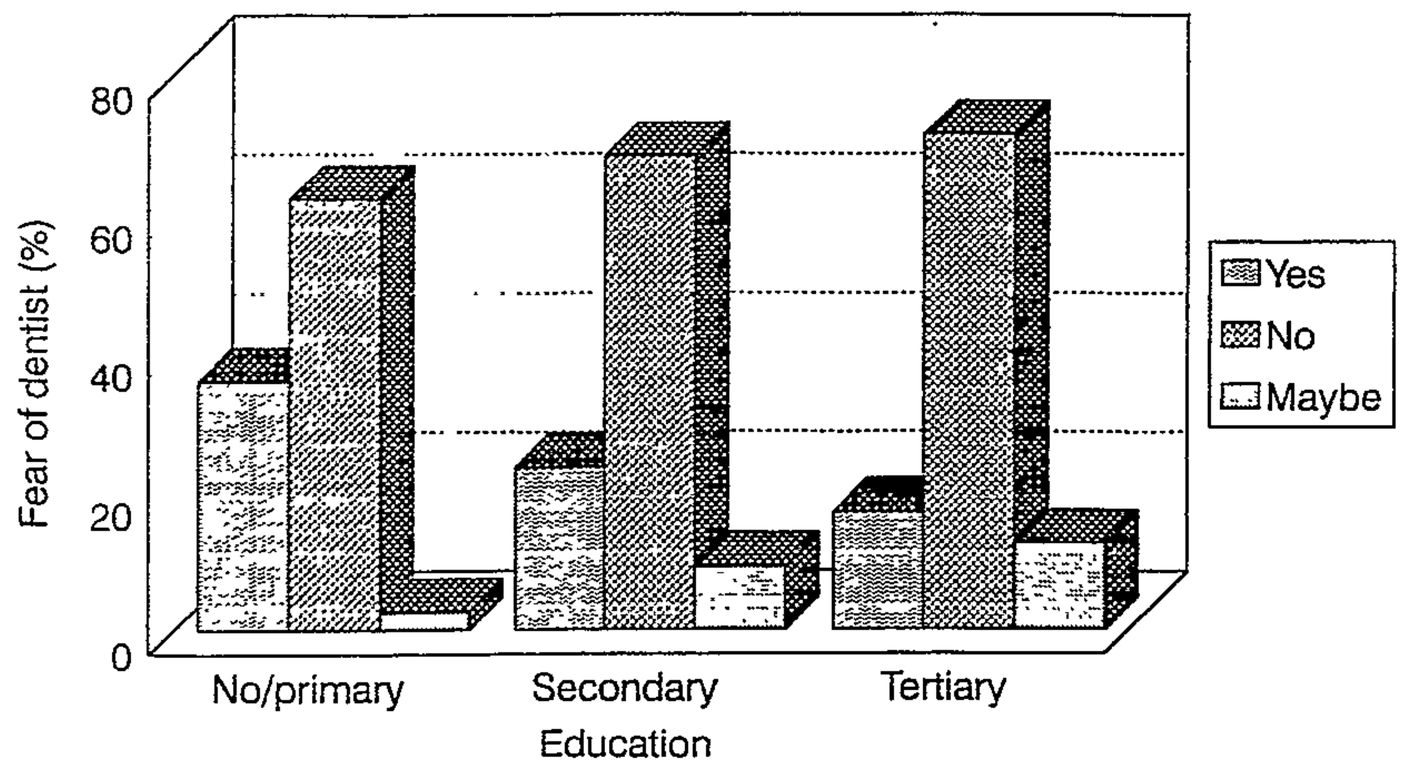


Figure 31 - Education vs Fear of dentist



Treatment needed

A majority of the population (75.5%) indicated that they need treatment. When each individual was asked about what treatment they perceived was needed, 51.7% of the responses indicated they needed cleaning of their teeth; 25.9% needed fillings; 20.7% needed advice; 16% needed extraction; 9% needed dentures while 2.3% needed other treatment **(Figure 32)**. In **Table 20**, a greater number of the younger adults who are <30 years old (42.2%) indicated they need 'cleaning of teeth' compared to 35.7% of the 31-40 year-old age group and 22.1% of the >41 year-old age group ($p < 0.05$).

The need for 'cleaning of teeth' was also greatest in the non professional occupation (59.2%), have reached secondary education (52.2%) and earning medium or high income (60%). This was significant at $p < 0.001$.

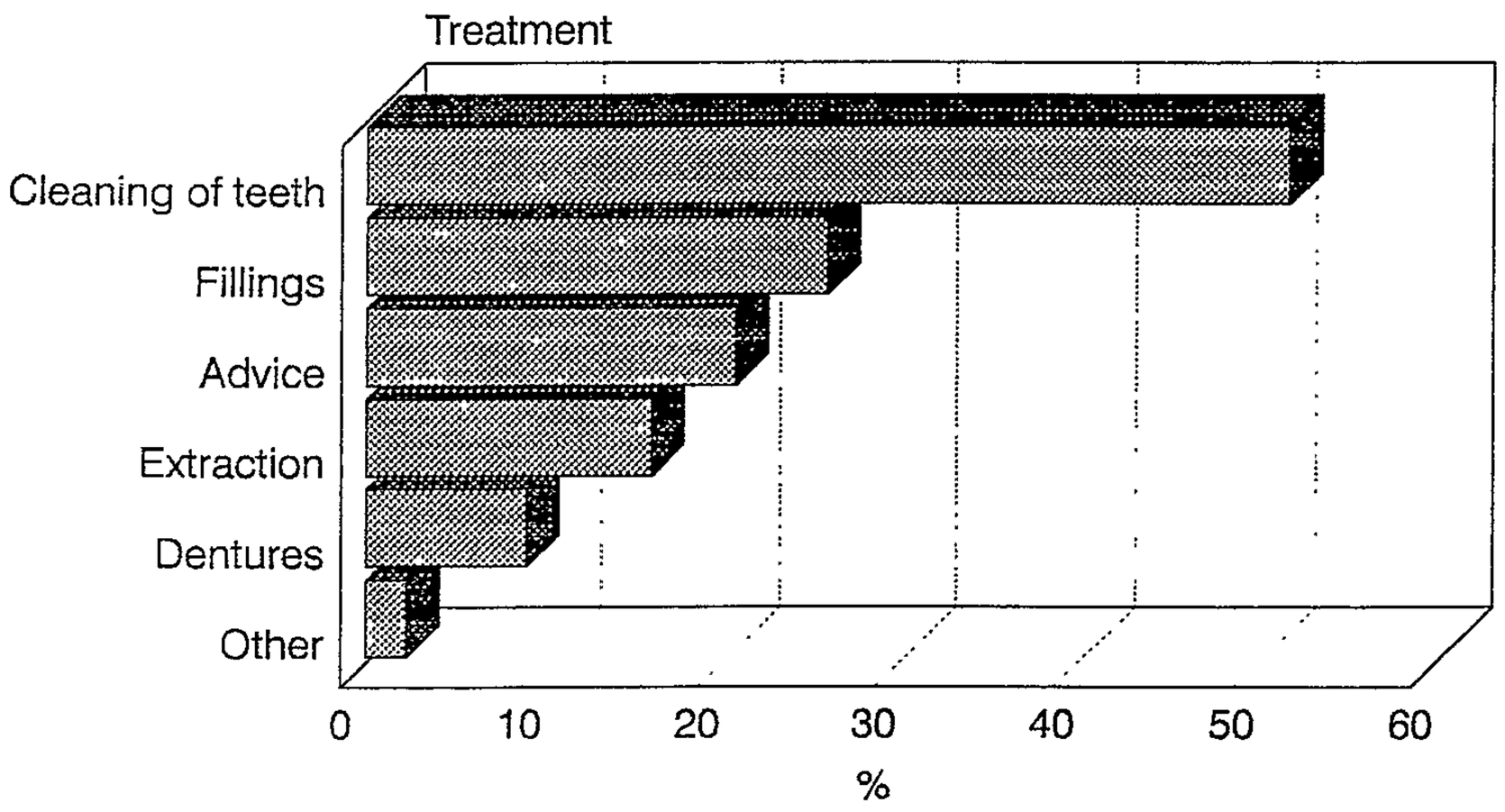
The perceived need for filling was greatest with individuals who have received secondary education (58.4%) and are receiving high income (39.5%) at $p < 0.001$.

Those that perceived they needed advice were from the non professional occupation (49.5%) and those who have received secondary education (53.6%) significant at ($p < 0.05$). The need for extraction was greatest with the more than 41 year-old group (37.2%) and in the non professional occupation (53.8%) and significant at $p < 0.05$. Also more individuals who received secondary education (52.4%) indicated they needed extraction ($p < 0.001$). The need for dentures was greatest in individuals who are more than 41 years old, received no or primary education and who were earning a low income ($p < 0.001$).

Table 20 - Treatment need (%)

	Age(yrs)			Occupation			Education			Income		
Perceived tx need	- 30	31-40	> 41	Professional	Non professional	Unemployed	No/ Primary	Secondary	Tertiary	Low	Medium	High
Extraction	28.2	34 6	37 2	13 8	53 8	32.5	35.7	52.4	11.9	48 2	26.5	25 3
Scaling and polishing	42 2	35 7	22 1	25.6	59.2	15.2	12.0	52.2	35.8	29 2	33 5	37 3
Fillings	41.4	38 3	20 3	22 2	56 3	21.4	7 3	58.4	34.3	28.7	31.8	39 5
Advice	43	34	23	30 5	49 5	20	10.9	53.6	35.5	30.1	34	35 9
Dentures	11 1	33 3	55.6	13	60.9	26.1	45.8	33 3	20.8	65.2	10.9	23 9
Other	41.7	41.7	16.7		72.7	27.3	33 3	41.7	25	54.5	18 2	27 3

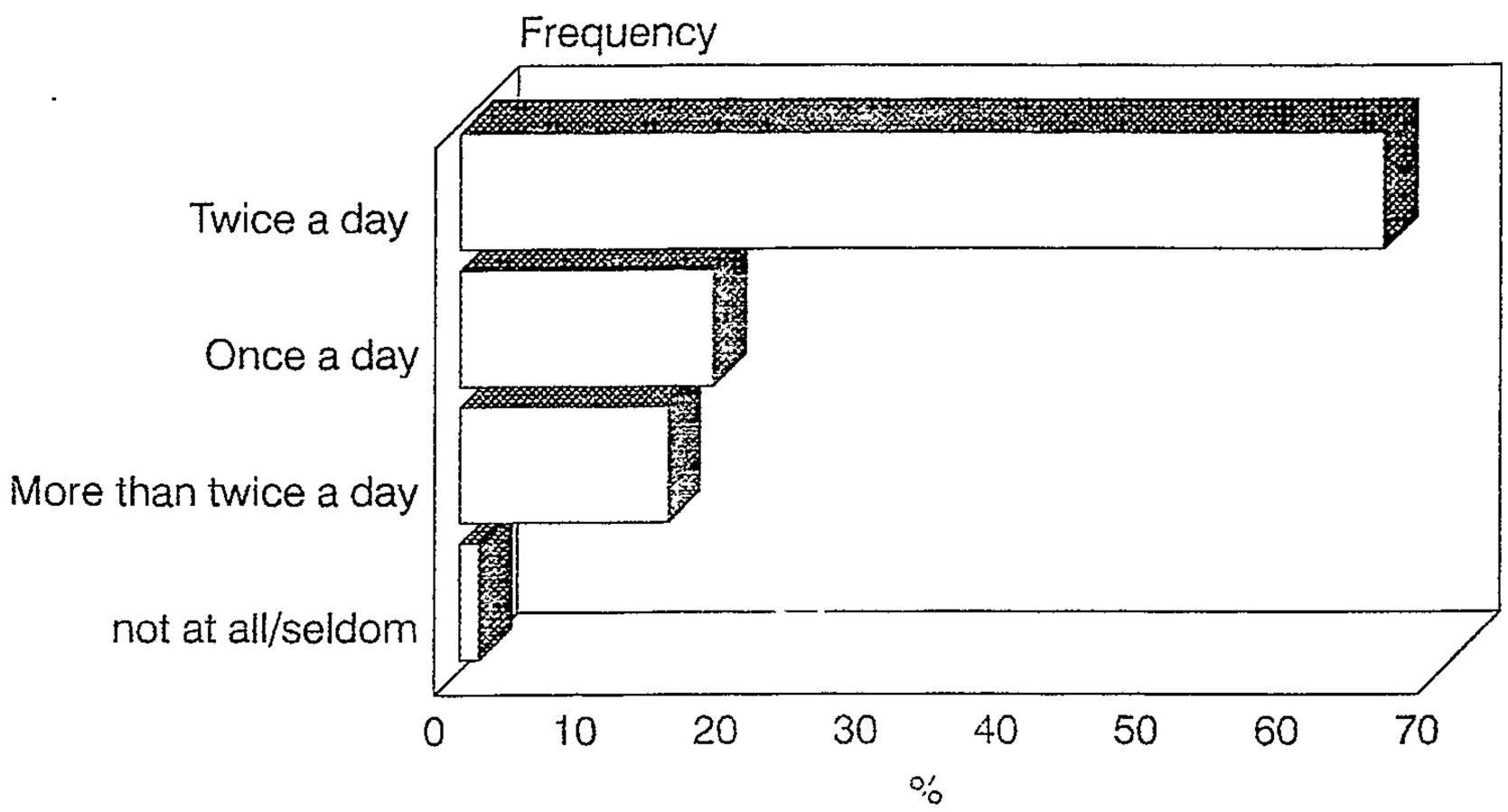
Figure 32 - Treatment needed



Brushing frequency

From this survey, 65.8% of the respondents brushed their teeth at least twice a day, 18% brushed once a day, 14.8% brushed more than twice a day and 1.4% seldom brush or not brush at all **(Figure 33)**.

Figure 33 - Brushing frequency



Dental Health Education

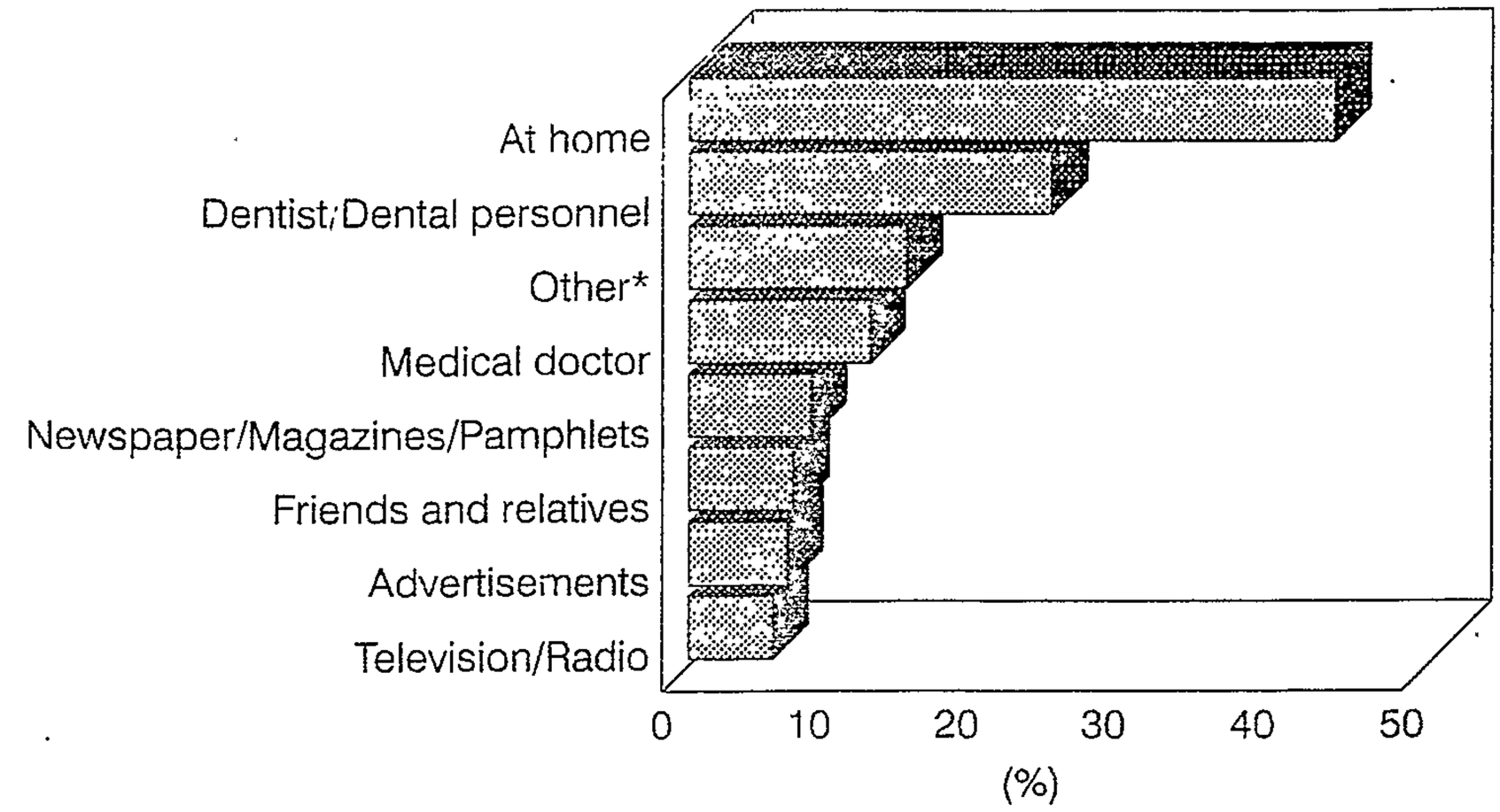
Both single and multiple responses on where the individuals had learnt to care for their teeth were elicited from the respondents. Out of the 848 responses **(Figure 34)**, the majority of the responses (43.6%) indicated that they learnt to care for their teeth at home. The next popular response was from the dentist (24.6%) and from school (14.8%). The rest of the responses are listed in **Table 21**. Given the choice on where the population would like to learn about how to care for their teeth, 58.4% indicated the dentist **(Table 21 and Figure 35)**.

Table 21 - Dental Health Education

	Learn to care for your teeth (%)	Would like to learn to care for your teeth (%)
Friends and relatives	7.1	1.3
Newspaper/Magazines/ Pamphlets	8.3	12.1
Medical doctor	12.3	12.4
Advertisements	6.7	4.3
Television/Radio	5.7	13
Dentist/dental personnel	24.6	58.4
At home	43.6	10.1
Other*	14.8	0.7

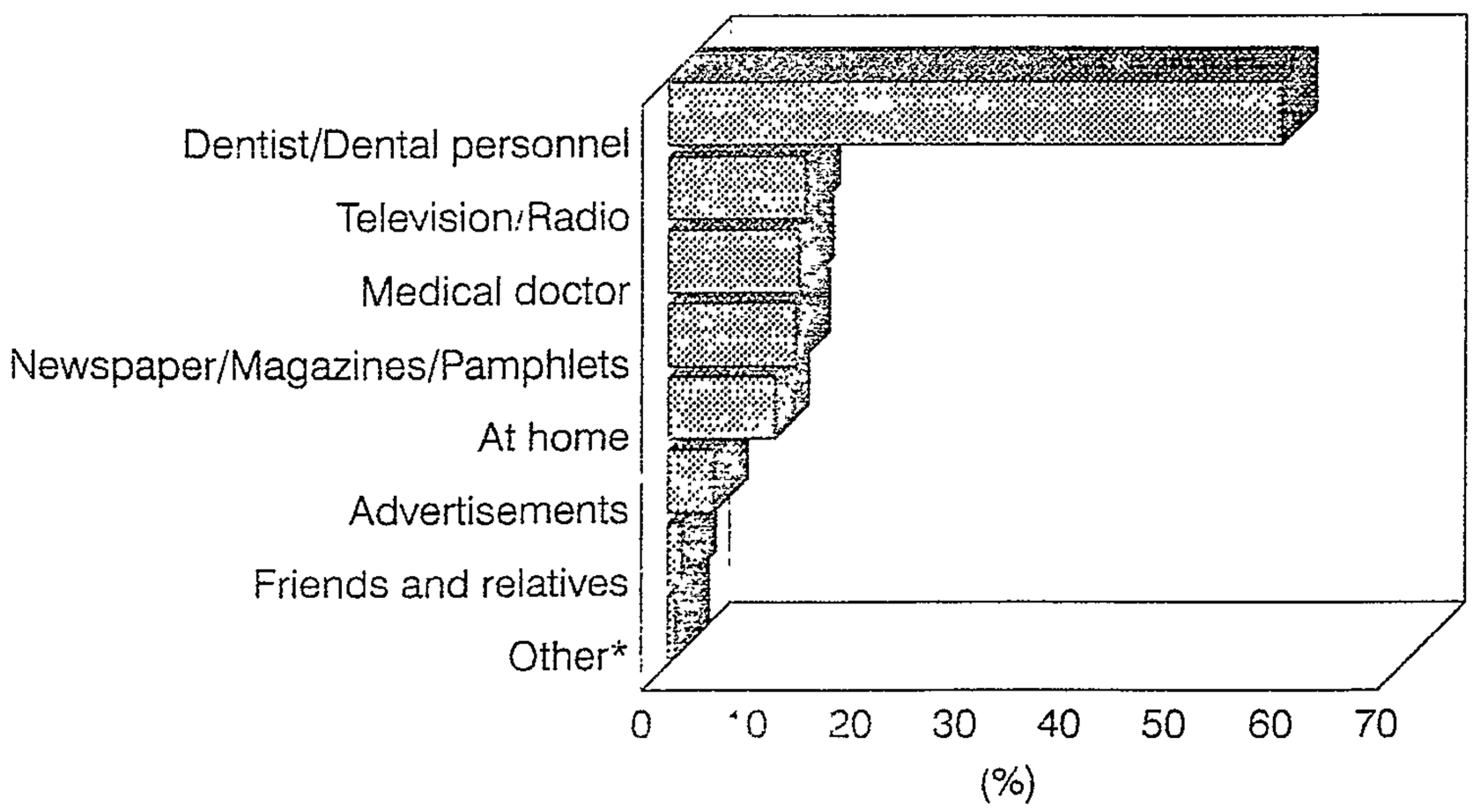
* School

Figure 34 - Learn to care for your teeth



*School

Figure 35 - Would like to learn to care for your teeth



Recommendations

It is noted that 29% of the respondents showed satisfaction with the current dental services, 22.4% thought it is poor and 47.7% said that the dental services in Fiji are good. The association of the comments on the dental services in Fiji with the education of the respondents is shown on **Table 22** and **Figure 36** is significant at $p < 0.001$.

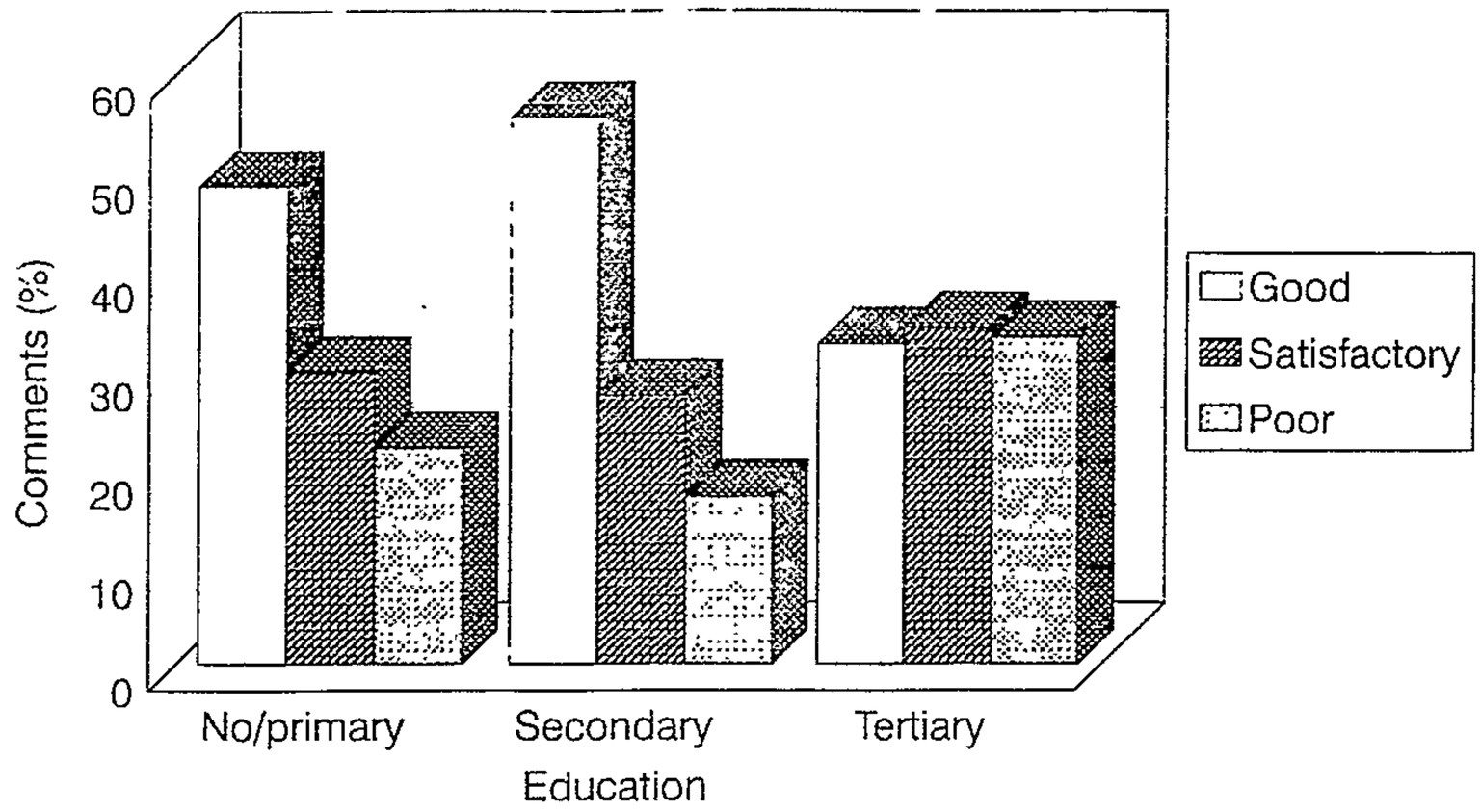
Table 22 - Comments on the dental services by education levels (%)

	Education***		
Comments	No/Primary	Secondary	Tertiary
Good	48.4	55.5	32.5
Poor	22	17.1	33.3
Satisfactory	29.7	27.3	34.1

*** $p < 0.001$

About half of the respondents from the no/primary (48.4%) and secondary (55.5%) education level said that the dental services are good while less than a third of the no/primary (29.7%) and secondary education (27.3%) group thought it to be satisfactory. However, about a third of those individuals who had received tertiary education thought the dental services are good (32.5%), 33.3% poor and another third (34.1%) satisfactory.

Figure 36 - Comments on the dental services vs Education



The suggestions that were proposed by the respondents to improve the dental services in Fiji were related to their comments on the dental services. Very practical and real suggestions were given and the breakdown is shown on **Figure 37 and Table 23** .

Figure 37 - Suggestions on improvement to the dental services

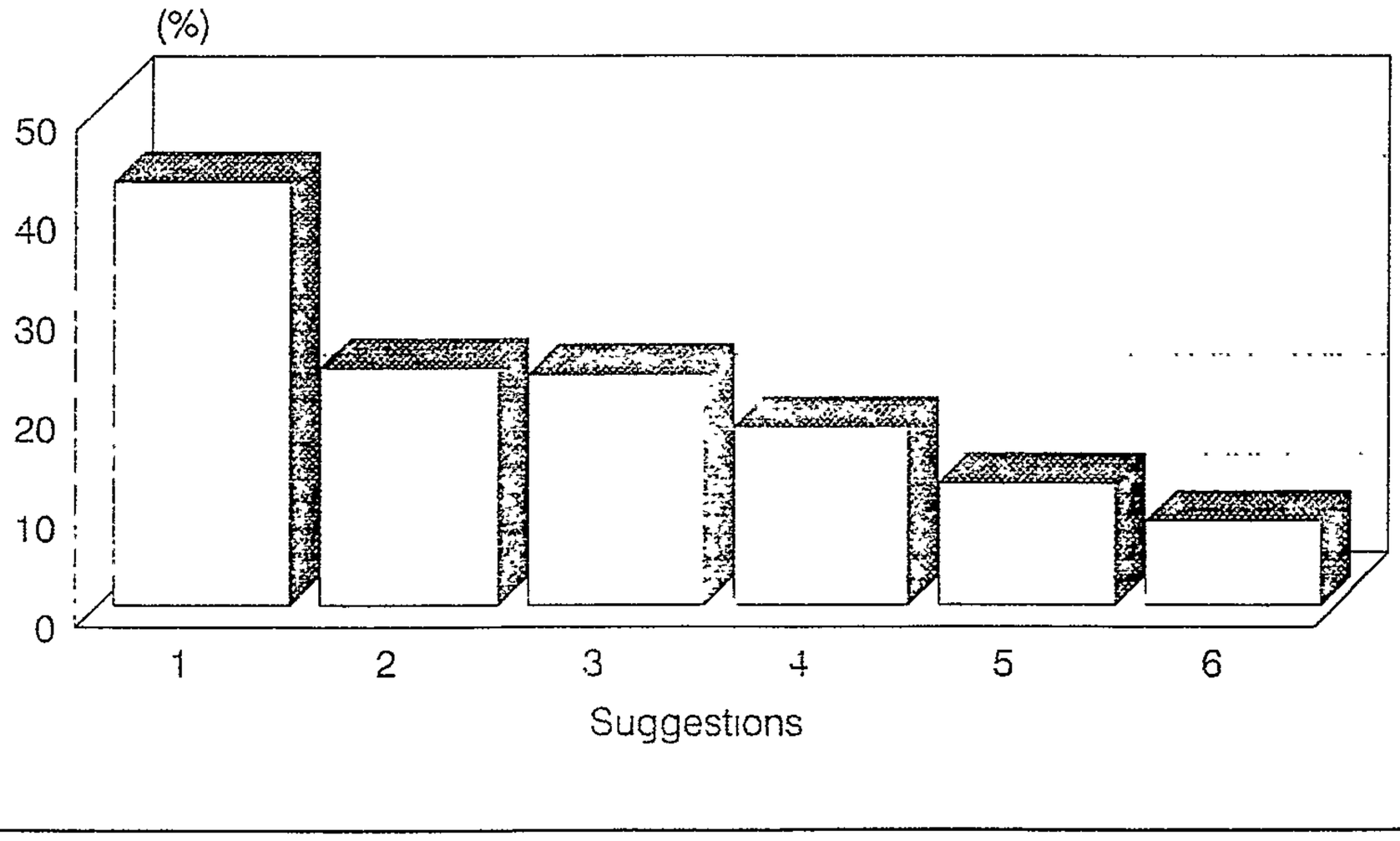


Table 23 - Suggestions on how the dental services could be improved

Suggestions	Percentage of the responses
1. Improve manpower problem	42.6
2. Extend dental services to other areas like schools, rural and work places	23.8
3. Improve the facilities/modern equipment	23.2
4. Advertise on television and radio/ Increase dental health education	17.9
5. Reduce fees	12.2
6. Extend operation hours/Reduce waiting period	8.4

There is a recognition by the population that Fiji is facing a manpower problem, as indicated by 42.6% of the responses. The next popular recommendations are to extend dental services to schools, rural and work places (23.8%) and improvement on the existing facilities with more modern equipment (23.2%). Extracting the population's suggestion on the manpower problem and highlighting the individuals personal suggestion is shown on **Table 24**.

Table 24 - **Population opinion about the necessary improvement to the manpower problem in Fiji**

Comments	Percentage
More dentist/dental personnel	35.4
More overseas/local training for dental personnel	13
Dentist not too friendly	7.3
Have more experienced/skilled dentists	6.9
Dental personnel to visit home/work/school	6.1
Dental personnel to be more gentle and kind in treating patients	5.3
Increase distribution of dentist to rural areas	4.9
Prompt attendance to patients	4.5
Have a professional approach to dental care	3.3
Spend more time with patients	3.3
Dental personnel to show more courtesy and smile	2.0
Should not go for tea or lunch all at once	2.0
Show more dedication to work	1.6
Public relation/communication problem	1.6
Better pay for dentists	0.8
Greet patients	0.8
Staff to be punctual	0.4
Train district nurses on simple dental care	0.4
More authority given to dental assistants during emergency cases	0.4

It is obvious that the population are recognising the need for more dental personnel, in addition to some improvement in the behaviour and attitude of dental personnel in serving and attending to patients as it is summarised on **Table 24**.

2.2.5 Discussion

Unlike the structured system in the school dental service, the adult population are given the freedom and the option to use the dental service as they thought to be appropriate. Once the pattern of utilisation in the target adult population is identified then the dental service system could make amendments in their delivery of the dental service, placing a greater emphasis on the so called '*neglected group*' so that optimum coverage of the population is achieved.

It is found from this survey that less than a third of the adult urban population are visiting the private practice, consisting mainly of those adults in the high income group, have received tertiary education and are in professional occupations. Conversely, those visiting the public dental service are the low income group, have received no or primary education and are unemployed ($p < 0.001$). Therefore by implication, the strategies that the government dental services are to enforce, should give emphasis to these target groups.

It is not a norm for the adult population to have a regular dental visit at least once in a year. If there is nothing wrong (dental-wise) then there will no visit to the dentist. Therefore, about 70% of the population visit the

dentist only when they have a dental problem. Extraction was the reason for the last visit in more than 30% of the respondents, while less than a third visit the dentist because of toothache. Accordingly, a greater percentage of Fijians (71.9%) visit the dentist only when faced with a dental problem compared to 61% of Indians ($p < 0.05$). Consequently, the perceived need for dental care was greater among the Fijians (79%) than Indians (71.4%), ($p < 0.05$). More than half of both Fijians and Indians visit the dentist at the same time there is a dental problem. However, there is a disparity between the two races for those who decide to visit the dentist later on, i.e Indians appeared to use the dental service only a few days later while Fijians will wait until they cannot bear the pain ($p < 0.01$). Further research may unfold the cultural factors which could influence and reinforce the value and beliefs of having a regular dental visits.

Evidently, within the last 12 months from the survey period, a greater percentage of the respondents who are less than 30 years old, with a medium income but have reached tertiary education level had visited the dentist. In contrast, the respondents who had not visited the dentist within the last 12 months from the survey period, are 41 years old and over, earning a low income and have received no or primary education ($p < 0.05$).

The percentage of individuals paying for their dental fees increases as the age increases ($p < 0.05$). A greater proportion of individuals in the professional and non professionals occupation paid for their own dental fees compared to the unemployed ($p < 0.001$). These results postulate that

because the unemployed consist of students, retired people and housewives the dental fees are paid either by their spouse, parent or that they are receiving government assistance. Government assistance for the exemption of dental fees is approved to holders of the exemption certificate shown in **Appendix 11**. There is a general consensus by about 60% of the population that the dental fees are affordable. But the 30% of the population who perceived that the dental fees cost too much cannot be neglected. The ability to pay for dental fees is important because these individuals pay for their dental fees from their own pocket, and like any other commodity dental fees do compete with other commodities in the every day family budget. Moreover, the ability to pay has always been considered to be a primary barrier to seeking care **(Gift, 1984)**.

The younger and older adults are more fearful of the dentist ($p < 0.05$). The level of education that the adult has reached indicated that those who have no or primary education do admit they fear the dentist. Those in the tertiary education group implied they fear the dentist, because although there is no clear cut answer, they choose to say 'maybe'. This is important because it seemed to suggest that this group will assess each confrontation with the dentist individually.

On the survey of the perceived need for treatment, it is surprising to discover that the population do indeed want a preventive approach to their treatment. There is a priority demand for prophylactic treatment, restorative treatment and advice from the population, but the irony is, the treatment that is actually given (by the dental personnel) showed the escalation in the

number of extractions **(Figure 9)**. It is postulated by the writer, because of the above disparity, that high work load, low morale and lack of continuing education are contributing factors which have driven dental personnel to be radical in their approach to treatment.

Although a majority of the respondents learnt to care for their teeth at home, presumably from parents and relatives, 58.4% of the responses indicated that they would like to learn about how to care for their teeth from the dentist. It would appear that dentists are not disseminating sufficient dental health education materials to the adult population.

A greater proportion of females (60.2%) than males (49.4%) indicated that they visited the dentist at the same time when there is a dental problem. Consequently, a greater proportion of females (78.6%) than males (74.5%) are confident if they were to visit the dentist at the present time. Similarly, a greater percentage of females (89.2%) than males (82.2%) are satisfied with the appearance of their teeth ($p < 0.01$). The trend exists where the younger adults and higher socio-economic status are preventively and consevatively orientated while the older adults with lower socio-economic status perceived extraction and the need for dentures to be appropriate.

There is an unanimous recommendation by the adult population that there is a need for improvement on the dental manpower in Fiji. Extension of dental services to the rural/work/school is limited at the present time, therefore an improvement in this area will warrant more dental personnel. The behaviour and attitude of dental personnel may in part reflect the working condition that prevails. Ultimately this attitude is filtered to the treatment rendered and the manner it is given. It is then appropriate that

the education of dental personnel should entail some of the public's opinion which is characterised in this survey. As shown on **Table 24**, continuing education and improvement on behavioural approaches to patients is essential.