ORIGINAL RESEARCH

Study of Dental Treatment Received by Attenders in Government General Dental Center/Hospital Dugbe, Ibadan-Nigeria: A 5-Year Longitudinal Retrospective Study

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ABSTRACT

A study to determine the different types of received patients attending the Government Dental Center/Hospital, Dugbe Ibadan, Nigeria between December 1999 and December 2004 and to see how this treatment is distributed among different sexes and age groups. Government Dental Center Dugbe, Ibadan, was the Pioneer Dental Center in the South-Western Region of Nigeria and was established in the precolonial era. The treatment pattern noticed was an alarming rate of extractions which accounts for 76.65% of all patients treated, dentures (6.96%), scalings (15.80%), filings (0.32%), medication (0.24%), checkup (0.03%) accounted for the rest. When this result is calibrated on actual treatment given (excluding medication and checkup), patients requiring extraction jumped to 76.23%. Female to male ratio was more than 2.1 while adult to underage ratio was 3.1. Thus, there is a need to urgently address this trend before the whole population is made edentulous and to embrace a preventive policy programmed in dentistry.

Clinical significance: There is an alarming rate of dental extraction which constitutes the commonest procedure carried out in this study in Nigeria.

Keywords: Longitudinal, Retrospective, Dental, Treatment, Dental center, Nigeria.

INTRODUCTION

Treatment Received by Attenders in a General Dental Center at Ibadan, Nigeria

The center used in this study is the oldest dental center in Ibadan, the capital of Oyo State, Nigeria. It is located in the commercial center of Ibadan a cosmopolitan town with about a population of 7 million people. Curiously, even with establishment of three other dental Centers by government in Ibadan and four others in the different geographical zones of the state, the Government Dental Center Headquarters Dugbe still draws its patients from the nook and crannies of the state.

For over a decade, the general emphasis in the developed country is the shift from standard treatment toward a more effective and wider scope of preventive dentistry,[1] there, is

therefore the need to make a concerted effort in the developing countries to follow this approach.

It is also important for dental examinations records to be made available properly and in useable form.

In the report of the Dental Strategy Review Group,[2] it was noted that information is available about items of treatment carried out in the general dental services, but that the methods of processing the data do not allow the record linkage which is needed to relate a series of courses of treatment to individual patients in order to investigate the effectiveness and durability of particular types of treatment.[2,3]

It is generally accepted that dental treatments are expensive and most of the time the services rendered especially in the developing world usually falls short of the scope of expected treatment while in the developed countries it was known that expensive treatments are provided which fail within a relatively short time.

It was documented that infrequent attenders had fewer teeth than frequent attenders and are therefore likely to have already lost more of teeth that would have been particularly susceptible to dental disease. It was documented that in the study by Nuttal that there was an average benefit of saving 0.81 teeth in frequent attenders while infrequent attenders had high number of extractions.[3]

Even though several studies had been carried out on pattern of tooth loss, prevalence of tooth loss, dental carries and periodontitis as a cause of tooth loss,[4-8] few studies are available on treatment needs of regular attenders of dental clinic in Nigeria.

This study was therefore undertaken to provide a baseline data of treatment received in a general dental center over a period of time to determine how effective and functional the dental services given in the state are and to know the present basic dental treatment needs.

MATERIALS AND METHODS

This was a survey of dental records of patients that attended the center between December 1998 and December, 2003. This short period was adopted because of peculiar problems of lack of storage facility for dental records thus, records of longer years are not usually complete or might not be available. Detection of multiple registrations was seen and appropriate adjustments and corrections were carried out.

There was not enough space to store records of longer years thus, there is continuous destruction of old records more than 5 years and occasional incorrect handling of records.

Once a patient registers about a year ago and he returns to the center, a new card is usually procured and all these made sorting laborious.

During the 5-year period, repetition of registration was carefully sorted out and eliminated so as to be sure of the accurate number of patients that attended the clinic. All previous registrations for any patient were picked and attached together.

This study was not for frequent or infrequent attenders but to determine the courses of treatments given over the 5 years periods.

Part of the problems encountered was that most of the time there was no full dental charting of missing and present teeth, however, all the carious teeth and those to be treated were usually charted.

Three types of records were created for this study. The initial one contained all the names of patients that attended the clinic from day one of the study to the last day of the study. This record was the daily attendance and was numbered as such.

The second record was done alphabetically with new column for the numbering so that no record will be missed out. The column for the numbering according to the days of attendance was still retained to enable each record to be traced.

Four main parameters were used in detecting any patient with dual or more registration and these are names, age, sex and areas of residence.

The treatments carried out were categorized as follow:
1. Dental checkup
2. Extraction
3. Restorations (fillings)
4. Root canal treatments
5. Dentures
6. Scaling and polishing
7. Medication

RESULTS

After the detection of multiple registrations, corrections and adjustment were carried out. A total of 25,369 patients reported in the dental center for treatment and the courses of treatment needed were 42,523. However, thirteen thousand one hundred and fifty-four courses of treatment (13,154) were carried out on eleven thousand two hundred and sixty-four patients (11,264) which translates to an average of 1.17 courses of treatment per patient whereas 1.68 courses of treatment per patient was needed.

In the same vein 11, 264 patients were treated out of 25,369 meaning that only two out of five patients were treated (44.40%) and 30.93% of the total courses of treatment needed were carried out.

The distribution pattern of different treatments, courses of treatment and number of patients treated in each category is as seen in Table 1.

About 30 patients reported for medication and checkup and when these number, were excluded, it does not affect significantly the result of this study. Elimination of these patients from the records shows that 44.33% of patients that reported were treated while 30.88% of the total courses of treatment needed were carried out.

The patients that needed medications were those who did not need any dental interventions and these include first time pericoronitis, fungal infection, sinusitis that present as apical periodontitis, etc therefore in the subsequent result presentation and discussion, these sets of patients will not be included.

Table 2 showed that the number of patients needing dental prophylaxis, amalgam filings, removable partial dentures and extractions were 2,002, 2,788, 3,225 and 17,323 respectively whereas the courses of treatment needed were 2,242, 4,094, 3,404, 32,753 respectively bringing the average course of treatment needed for each procedure to between 1.06 and 1.89 (see Table 2).

The actual treatment given to number of patients treated were, dental prophylaxis (1,780 patients), amalgam filling (36), removable denture (784) while extraction accounted

Table 1: Attendance and treatment chart				
Type of treatment	*No. of patients needing treatment*	*Courses treatment needed*	*No. of patients actually treated*	*No. of courses given to the patient treated*
Checkup	10	10	10	10
Checkup medications	30	30	30	30
Dental prophylaxis	2,002	2,242	1,780	1,882
Amalgam	2,788	4,094	36	36
Removable dentures	3,226	3,404	784	798
Extraction	17,323	32,753	8,634	10,408
Total	25,369	42,523	11,264	13,154

Table 2: Treatment needs of patients

Type of treatment needed	No. of patients treated	No. of courses of treatment	Average course of treatment per person
Dental prophylaxis	1,780	1,882	1.06
Amalgam fillings	36	26	1.00
Removable partial denture	784	798	1.02
Extraction	8,634	10,408	1.22
Total	11,234	13,124	1.22

Table 3: Actual treatment procedures carried out

Type of treatment	No. of patients needing treatment	Courses of treatment needed	Average course of treatment needed per patient
Dental prophylaxis	2,002	2,242	1.12
Amalgam fillings	2,788	4,094	1.47
Removable partial denture	5,226	5,404	1.06
Extraction	16,843	32,753	1.82
Total	24,859	42,493	1.22

Note: 65.93% of the total number of patients needing treatment were treated while 61.47% of the total courses of treatment needed were fulfilled

for 8,634 patients. The courses of treatment given for these procedures were 1,882, 36, 798, 10,408 respectively. The courses of treatment provided for these patients were 1882 for dental prophylaxis, 36 for amalgam fillings, 798 for removable partial denture and 10,408 for extractions. Thus, the average course of treatment given varied from 1.00 to 1.21 (see Table 3).

Out of the 11,234 patients treated, 8,529 were adult (75.92%) while children, which were defined as patients under the age of 16, as at the time of attendance, amounted to 2,705 (24.08%). Courses of treatment given in adult were 9,835 (74.94%) while underaged accounted for 3,289 (25.06%) (Tables 4 and 5).

The total population of patient see by sex distribution showed that female were 8,386 (74.65%) while male were 2,848 (25.35%) whereas 9,885 (95.32%) courses of treatment were carried out on female while makes had 3,239 (24.68%) (Table 6). Sex distribution in underages showed that 1,908 patient were female while males were 979 accounting for 70.54, 29.46% respectively. The 942 and 2,347 courses of treatment were given to males and females accounting for 28.64 and 71.36% respectively (Table 7).

Sex distribution in the adult population revealed that 6,478 female patients were treated as against 2,015 male patients accounting for 75.95 and 24.05% respectively. A total of 7,538 and 2,297 courses of treatment were carried out on female and male respectively (Table 8).

None of the patients in this study can conveniently be termed 'regular' attenders because most of these patients who attended more than once in the 5-year period did so either due to the fact that the course of treatment prescribed were not completed or the treatment could not be started for one reason or the other.

Table 4: Age grouping for patient treated

	No. of patient treated	%
Adult	8,529	75.95
Children	2,705	24.08
Total	11,234	100

Medical checkup and medication excluded

Table 5: Age grouping according to courses of treatment given

	Courses of treatment given	%
Adult	9,835	74.94
Children	3,289	25.06
Total	13,124	100

Table 6: Total attendance by sex according to courses of treatment and of patient treated

Sex	Courses of treatment	%
Female	9,885	75.32
Male	3,239	24.68
Total	13,124	100
Sex	No. of patient treated	%
Female	8,386	74.65
Male	2,848	25.35
Total	11,234	100

A total of 260 filling (9.42%), 1,882 scaling and polishing (6.92%), 6,106 needed dentures (11.42%) while 15,026 extractions 70.36% were carried out.

Dental checkup	3 = 0.03%
Medication	27 = 0.24%
Fillings	36 = 0.32%
Scaling and polishing	1,780 = 15.80%
Dentures	784 = 6.96%
Extractions	8,634 = 76.65%
	11,264 = 100.00%

Table 7: Sex distribution in underaged patients

Sex	Courses of treatment	%
Female	2,347	71.36
Male	942	28.64
Total	3,289	100

Sex	No. of patient treated	%
Female	1,908	70.54
Male	797	29.46
Total	2,705	100

Table 8: Sex distribution in adult patients only

Type of treatment	No. of patients needing treatment	No. of patient	%
Dental prophylaxis	2,002	1,780	88.91
Amalgam fillings	2,788	26	1.29
Removable partial denture	3,226	784	24.30
Extraction	17,322	8,634	49.84
Total	25,339	11,234	44.33

Comparison of treatment given and treatment needed as shown in Table 9 indicated that 0.8% of amalgam fillings needed were carried out, during that period while those for scaling, dentures and extraction were 83.940, 23.44 and 31.78% respectively. Analysis in relation to number of patients needing treatment and those actually treated showed that out of those needing amalgam fillings, only 1.29% were treated, 88.91% of those needing scaling and polishing were treated, 24.30% for removable dentures, while only 49.84% of those needing extraction were treated at the center.

The percentage of patients treated for the various procedures showed that 0.32% had amalgam fillings, 15.80% had dental prophylaxis, 6.96% got dentures while 76.65% had extraction done on them. A total of 11,264 patients received 13,154 courses of treatment and the distribution showed that amalgam fillings accounted for 0.27% of all courses of treatment given, scaling and polishing (14.31%), dentures (6.07%), extraction (79.12%) while checkups and medication accounted for the rest.

Apart form dental prophylaxis that has a high treatment efficiency, one out of two patients that needed treatment were seen while 1 out of three were observed in the courses of treatment given.

Dental checkup	3 = 0.02%
Medication	27 = 0.21%
Fillings	36 = 0.27%
Scaling and polishing	1,882 = 14.31%
Dentures	798 = 6.07%
Extractions	10,408 = 79.12%
	13,154 = 100.00%

DISCUSSION

Restorative dentistry procedure are imminent in developing economies especially Nigeria due to the increasing importation of civilization which impacts negatively on the oral health of the population. This is because of increased sugar consumption without established oral health prevention policy program, more so, knowing that restorative dentistry when prevalent is expensive. Although in the developed countries it causes a lot of man hour loss, this situation cannot be applied in this instance as it is found out that very few fillings were carried out in this center.

In the 1978 Adult Dental Health Survey 46% dental adults questioned said that they did not like fillings and that was why they always put off their appointments, however in this study, it was not possible to ask for the opinion of these patients. Record, showed that only 0.32% of patients needing fillings were treated while the greater proportion were lost. It is not impossible that these patients were lost to other private dental clinics due to lack interest in restorative procedure at this center or were subsequently included or cajoled to have extraction done as this would be faster.

In the longitudinal survey of dental care provided in the general dental service in Scotland [2,3] only 720 dentate adults were involve whereas this study had 11,264 patients comprising 8,529 adults while under aged amounted to 2,705. However, the study size which involves those patients that needed treatment showed that 25,369 patients were seen at the center. Out of this 11,264 patients were treated, however, exclusion of medication and checkup patients showed that 11,234 out of the total 25,339 that came to the clinic were treated which means only 44.33% of patients needing treatment were actually treated. This figure was not based on courses of treatment received but on individual receiving treatment.

Table 9: Comparative treatment carried out

Type of treatment	No. of patients needing treatment	Courses of treatment given	%
Dental prophylaxis	2,242	1,882	83.94
Amalgam fillings	4,094	36	0.88
Removable partial denture	3,404	798	23.44
Extraction	32,753	10,408	31.78
Total	42,493	13,124	30.89

More females than males were noted to have attended the dental center which, may be due to the fact that they had time at their disposal and also care for their dentition more than males. The ratio of adult female to male is slightly more that 3:1 whereas for the underaged the ratio is slightly more than 2:1. The reason for lower attendance noted in children might be due to the fact that the underaged usually relies on their parents to bring them to the clinics for treatment thus, their attendances may be due to the following factors:

1. Ability of parents to quickly find to bring them to clinic
2. Parents tend to care for their female siblings' dentition than the males
3. Male adolescents and young tend not to pay attention to pain like their female counterparts
4. Female children tend to have an earlier consciousness of their bodies or body features than males
5. The school system and time coupled with the opening hours of the dental center may not easily fit the schedule of parents or guardian.

In this study, cost of restorative procedures did not play any role because the cost of putting a filling is almost the same as that of extracting the tooth. It was discovered that there was no single case of crowing, post and core or root canal treatment during this period.

The rate of extraction is very alarming considering the fact that it forms 76.86% of all patients treated but based on courses of treatment it accounted for 79.31%. It therefore means that about 1,700 patients were having their teeth extracted yearly in this center alone which may lead to edentulous situation within a very short time in the population.

In a particular study of first visit patients the assessment of normative treatment needs showed that more males sought treatment than females with 55.4, 8.1 and 1.4% of patients seeking care for tooth ache, caries without concomitant pain and dental checkup respectively.[9]

The reason for the high rate of extraction was not deducible from the records as the actual causes of extraction were not indicated. The fact that a tooth is carious or has led to irreversible pulpitis should not be an indication for tooth removal neither should a carious tooth with pulpal involvement be an indication for its removal.

There is the need for reversal of these treatment patterns in the dental health care system in Nigeria at this level to prevent the population being rendered edentulous. It is also essential for proper enlightenment of the populace to early attendance as soon as a discomfort is noticed unlike what is the practice now that only severe pain brings the patient to the dentist. This seems to confirm the opinion expressed by Nuttal,[3] that infrequent attenders tend to have many teeth removed during their rare visits to the dentists. It therefore seems likely that a large proportion of the edentulous population is made up of people who were infrequent dental attenders.

From the pattern observed above, it is clear that the problem of dental disease may be assuming an uncontrollable magnitude, if special attention is not paid to nip the problem in the bud.

1. Preventive measures have not been vigorously pursued.
2. No direct or indirect policy on fluoridation.
3. No direct government assistance in the developing countries as seen in the national health scheme of developed countries.
4. Dental prophylaxis has not been incorporated into the treatment plan as a routine.
5. The entire population is unaware of dental prophylaxis as routine to help prevent some dental diseases.
6. In addition to the above, there has been an alarming increase in availability and consumption of refined sugar and chocolates especially in children and young adults.
7. The cost of provision of dental treatment is high because all materials, instruments and equipments used in dentistry are imported and thus is heavily dependent on the economies of such developing countries and in Nigeria on the Dollar:Naira ratio.

In Nigeria today, there has been an increase in caries activity, but with the attitude of dental patients still largely remaining the same. From the records available, majority of these report to their dentists only after unbearable and severe pain or symptoms which refused to abate after several attempts at ameliorating the pain or symptoms through private medication or use of local herbs. Some of these patients usually doses not come back for checkup once the pain is relieved through medication or partial intervention from the dentist.[10]

There is clearly a benefit associated with being a frequent attender or being a checkup patient who shows up at least once in a year to see his dentist as this will help in detecting any disease in its earliest stages thus, controlling or influencing the course of the disease.

CONCLUSION

Frequent attenders were known to have more restorative and periodontal treatment than those who are infrequent attenders thus, the high extraction rate seen in the latter. This in addition to lack of dental preventive program, dental prophylaxis, fluoridation policy and increased influx of refined sugars, chocolates and consequent consumption of these culminated in the high loss of dentition being witnessed in this study.

A preventive philosophy that includes noninvasive treatment of carious lesion may be beneficial in this instance. This could be carried out by:

1. Setting up an oral health disease control unit or a dental preventive unit which will organize group talks or enlightenment campaign in the first 30 minutes or 1 hour before treatments are commenced by the dentists.
2. Adopting a vigorous enlightenment campaign at each of such visits to the dental center.
3. Large enlightenment program or visit to maternity clinics, market places, schools.
4. Continuous campaign on electronic media as regards preventive strategies in oral health care.

Finally, there is the need to formulate and kick start oral preventive health policies that can help in reversing the ugly trend noticed before it becomes too late.

REFERENCES

1. Dental Strategy Review Group. Towards better dental health: Guidelines for the future. Department of Health and Social Security, London: 1981:57.
2. Elderton RJ. Longitudinal study of dental treatment in general dental services in Scotland. Br Dent J 1983;155:91-96.
3. Nuttal NM. General dental service treatment received by frequent and infrequent dental attenders in Scotland. Br Dent J 1984;156:363-66.
4. Folayan MO, Otuyemi OD, Esan TA, Adeleke AA, Adedigba MA. Pattern of dental extraction in children in Nigeria tertiary hospital. J Contemp Dent Pract 2005 May 15;6(2):80-90.
5. Dosumu OO, Denloye OO. Pattern of permanent tooth loss in Nigerian children and their prosthetic replacement. Afr J Med Sci 1999;28:31-33.
6. Odusanya SA. Tooth loss among Nigerians: Causes and pattern of mortality. Int J Oral Maxillofac Surg 1987 Apr;16(20):184-89.
7. Okoisor F, Ana JR. Pattern of tooth loss in Nigerians. Niger Med J 1976 Jan;6(1):84-87.
8. Sanya BO, Nganga PM, Nganga RN. Causes and pattern of mission permanent teeth among Kenyans. East Afr Med J 2004 Jun;81(6):322-25.
9. Oginni FO. Tooth loss in a suburban Nigeria population: Causes and pattern of mortality revisited. Int Dent J 2005 Feb;55(1):17-23.
10. Olaleye AO. Longevity and failure patterns of amalgam restorations at the University College Hospital, Ibadan, Nigeria, Fellowship of West African College of Surgeons Thesis. WACS 1997:17-19.

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