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Oral and Dental Diseases among Children and Adolescents in Kano, Nigeria

Doenças Orais e Dentárias em Crianças e Adolescentes em Kano, Nigéria

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RESUMO

Objetivo: Revisar as características das doenças orais e dentárias em crianças e adolescentes e analisar os serviços odontológicos realizados no Departamento de Cirurgia maxilofacial do Hospital Escola Amino Kano, em Kano, Nigéria, em um período de dois anos.

Método: Um estudo retrospectivo foi realizado no período de julho de 2001 a junho de 2003 sendo analisadas várias doenças orais e dentárias.

Results: Foram analisados 126 (58,1%) meninos e 91 (41,9%) meninas (proporção de 1,4:1) com idades entre 2 dias a 19 anos e média de idade de $3,9 \pm 1,01$ anos. A dor foi a queixa principal (51,6%). Outros motivos para o atendimento foram traumatismo dentário e maxilar ($n=26$, 12%), sangramento e inchaço gengival (6,9%), desalinhamento dentário (6,9%), defeitos faciais (2,8%) e incapacidade de abrir a boca (2,8%). A cárie ainda permanece como a doença dentária mais comum em crianças e adolescentes (49,8%). Dos exames realizados, o radiográfico (83,7%) foi o mais utilizados. Vários procedimentos odontológicos foram realizados na população analisada.

Conclusão: A dor foi a queixa mais comum na amostra analisada. Embora a cárie dentária permaneça como a doença mais prevalente, outras condições foram diagnosticadas incluindo o desalinhamento dental, o qual requer os serviços de outros especialistas. As necessidades da população são determinadas por meio das informações obtidas de estudos desta natureza, todavia, esforços devem ser implementados visando um melhor planejamento dos serviços odontológicos. Provisão de recursos suficientes e treinamento de pessoal odontológico para lidar com a necessidade da população em particular é, portanto, muito importante.

ABSTRACT

Objective: To review the pattern of oral and dental diseases among children and adolescents and appraise the dental services rendered at the Dental and Maxillofacial Surgery Department, Aminu Kano Teaching Hospital, Kano, Nigeria over a two-year period.

Method: A retrospective study of children and adolescents with oral and dental diseases seen at the Department of Dental and Maxillofacial Surgery, Aminu Kano Teaching Hospital, Kano, Nigeria, between July 2001 and June 2003, was conducted. A total of 217 children and adolescents were seen with various oral and dental diseases during the period under review.

Results: There were 126 (58.1%) males and 91 (41.9%) females, a male to female ratio of 1.4:1 with an age range of 2 days to 19 years and a mean age of 3.9 ± 1.01 years. Pain was the most common complaint (51.6%). Other complaints were trauma to teeth and jaws (12.0%), bleeding/swollen gums (6.9%), malaligned teeth (6.9%), facial defects (2.8%) and inability to open the mouth (2.8%). Caries still remained the most common dental disease experienced by children and adolescents (49.8%). Of the investigations used, radiological investigations (83.7%) were the most carried out. Various dental procedures were carried out in the study population during the period under review.

Conclusion: Pain was the most common complaint among the subjects seen. Though dental caries remained the most common dental disease, other conditions were seen including those who had malaligned teeth requiring the services of other dental personnel. The needs of the community are determined by the information obtained from studies of this nature, thus affording better planning of future oral care services. Provision of sufficient funds and training of dental personnel to cope with the need in the particular population is thus very paramount.

DESCRITORES

Cárie dentária; Doenças bucais; Criança; Adolescente.

KEYWORDS

Dental caries; Mouth diseases; Child; Adolescent.

INTRODUCTION

Oral and dental diseases are common in the developing countries. The occurrence and pattern of these diseases vary from one community to another; and depend on various factors among which are the prevailing oral care practices, the level of dental awareness and the attitude of the people in the community. With sufficient manpower, availability of modern dental equipment and a wide range of dental materials, oral health care for the child and adolescent has improved tremendously in the past three decades. This has been attributed to advances in technology^{1,2}.

Epidemiological studies have shown that the prevalence of dental diseases particularly dental caries is on the steady increase in the developing countries as refined sugars, sweets and fruit drinks have become more readily available³⁻⁶. Currently, dental caries has become a serious problem in school children and periodontal disease is widespread in the adult population⁷. It was reported that the prevalence of dental caries among young people in the Northern States of Nigeria was an indication of a changing dietary pattern and was due to an increased consumption of sweets and similar sugary foods both in villages and cities⁴.

The pattern of presenting complaints and utilization of the services of a hospital based dental clinic is a reflection of the pattern of oral and dental diseases found in that community. The needs of the community can thus be determined by the information obtained, and future oral care services can be better planned with the provision of sufficient funds and training of dental personnel to cope with the need in the particular population.

The purpose of this survey was to review oral and dental diseases among children and adolescents during a two-year period at the Dental and Maxillofacial Surgery Department, Aminu Kano Teaching Hospital, Kano, Nigeria. This study reflects on the oral health needs of the particular population thereby assisting in planning of future oral health care delivery services. It is the hope of the authors that information obtained will be of value for future teaching purposes, for further research and to better plan oral health care delivery services for the community studied.

MATERIALS AND METHODS

The study was conducted at the Dental and Maxillofacial Surgery Department of Aminu Kano Teaching

Hospital, Kano, Nigeria over a two-year period between July 2001 and June 2003. The centre serves four of eight states in Nigeria's northwest geopolitical region.

All the case files of children and adolescents that presented for dental consultations during the study period were retrieved, reviewed by one of the authors (SOO), and included in the study.

A total of two hundred and seventeen (217) children and adolescents were seen during the period under review. The demographic data, presenting complaints, pattern of oral and dental diseases, investigations and treatment carried out were recorded.

Data were entered into the computer and analysed using Epi info version 6 health statistical software. Descriptive statistic was used. Frequency distribution tables were generated for categorical variables, means and standard deviations were determined for these variables.

RESULTS

Two hundred and seventeen children and adolescents representing 59.3% of total patients who presented during the period under review were seen. There were 126 (58.1%) males and 91 (41.9%) females, a male - female ratio of 1.4:1. The age range of children and adolescents seen was from 2 days to 19 years (mean = 3.9 years+ S.D. = 1.01). Majority of the subjects (n = 91, 41.9%) were aged 6 to 10 years. The socio-demographic characteristics are shown in Tables 1 and 2.

Table 1. Demographic characteristics of patients seen at AKTH, Kano.

| Characteristics | Frequency | |
|--------------------|--------------------|-------|
| | n | % |
| Age (years) | | |
| 0-5 | 65 | 29.9 |
| 6-10 | 91 | 41.9 |
| 11-15 | 60 | 27.6 |
| > 16 | 1 | 0.5 |
| Range | 2 days to 19 years | |
| Mean | 3.9 years | |
| Standard Deviation | 1.01 | |
| Sex | | |
| Male | 126 | 58.1 |
| Female | 91 | 41.9 |
| Ethnicity | | |
| Hausa | 187 | 86.2 |
| Ibo | 11 | 5.1 |
| Yoruba | 15 | 6.9 |
| Others | 4 | 1.8 |
| Total | 217 | 100.0 |

Table 2. Age and Sex distribution of patients seen at AKTH, Kano.

| Age (Years) | Sex | | Total | |
|-------------|------|--------|-------|-------|
| | Male | Female | n | % |
| 0-5 | 41 | 24 | 65 | 29.9 |
| 6-10 | 49 | 42 | 91 | 41.9 |
| 11-15 | 36 | 24 | 60 | 27.6 |
| > 16 | 0 | 1 | 1 | 0.5 |
| Total | 126 | 91 | 217 | 100.0 |

Table 3 shows the presenting complaints of children and adolescents who attended the Dental Clinic at the Dental and Maxillofacial Surgery Department of Aminu Kano Teaching Hospital, Kano. Majority of the subjects 112 (51.6%) presented with complaints of pain of toothache and symptoms associated with tooth/teeth cavitation(s). Twenty-eight (12.9%) patients complained of jaw/facial swellings, 15 (6.9%) patients complained of symptoms related to periodontal problems (swelling/bleeding gums, mobility of the teeth) and 10 (4.6%) patients had orthodontic complaints.

Table 3. Presenting complaints of children and adolescents seen at AKTH, Kano.

| Presenting Complaint | Frequency | |
|---------------------------------|-----------|-------|
| | n | % |
| Pain/Toothache | 112 | 51.6 |
| Jaw/Facial swelling | 28 | 12.9 |
| Swollen/bleeding gums | 15 | 6.9 |
| Maligned teeth | 10 | 4.6 |
| Broken teeth/jaw/lacerations | 26 | 12.0 |
| Facial defects | 6 | 2.8 |
| Inability to open mouth | 6 | 2.8 |
| Tooth loss/request for dentures | 2 | 0.9 |
| Discoloured teeth | 5 | 2.3 |
| Check-up | 7 | 3.2 |
| Total | 217 | 100.0 |

A total of 26 (12.0%) patients presented with complaints related to traumatic injuries; which included broken tooth/teeth, lacerations of facial soft tissues and broken jaws. Six (2.8%) patients complained of facial defects resulting mainly from cleft lip and palate; 6 (2.8%) patients complained of inability to open their mouth due to temporomandibular joint ankylosis and fibrosis. Only 2 (0.9%) complained of tooth loss and required dentures. Others were complaints of discoloured teeth, 5 (2.3%). There were 7 (3.2%) children and adolescents who presented for routine dental check (Table 4).

The pattern and distribution of oral and dental diseases seen in children and adolescents are shown in Table 5.

One hundred and twenty-five (50.4%) cases were

diagnosed with dental caries and related diseases. This included those with failed restorations and those with sequel of dental caries (retained roots, pyogenic granuloma, dentoalveolar abscess etc).

Table 4. Pattern of oral and dental diseases in children and adolescents seen at AKTH, Kano.

| Oral/Dental Disease | Frequency | |
|----------------------------------|-----------|-------|
| | n | % |
| Dental caries & related diseases | | |
| Dental Caries | 108 | 43.5 |
| Failed amalgam filling | 4 | 1.6 |
| Retained roots | 5 | 2.0 |
| Pyogenic granuloma | 3 | 1.2 |
| Dentoalveolar abscess | 5 | 2.0 |
| Periodontal & related diseases | | |
| Gingivitis | 7 | 2.8 |
| Juvenile Periodontitis | 2 | 0.4 |
| AUG/Cancrum oris | 6 | 2.4 |
| Tumours | | |
| Benign/Malignant tumours | 10 | 4.0 |
| Cysts | 6 | 2.4 |
| Fibroosseous lesions | 5 | 2.0 |
| Odontomes | 1 | 0.4 |
| Trauma | | |
| RTA/Traumatic injuries | 28 | 11.3 |
| Teeth fracture | 6 | 2.4 |
| Jaw fracture | 8 | 3.2 |
| Malocclusion | | |
| Malocclusion | 6 | 2.4 |
| Retained primary teeth | 5 | 2.0 |
| Others | | |
| Cleft lip/palate | 6 | 2.4 |
| Ankylosis | 6 | 2.4 |
| Missing teeth | 2 | 0.8 |
| Hypoplasia/intrinsic stain | 5 | 2.0 |
| Check up | 7 | 2.8 |
| Others | 7 | 2.8 |
| Total* | 248 | 100.0 |

*Some patients had more than 1 disease.

Table 5. Investigations carried out among Children and Adolescents attending AKTH, Kano.

| Investigations carried out | Frequency | |
|----------------------------|-----------|-------|
| | n | % |
| Radiological | | |
| Intraoral | 96 | 71.1 |
| Extraoral | 16 | 11.9 |
| Scan | 1 | 0.7 |
| Biopsy | | |
| Aspiration | 3 | 2.2 |
| Excision | 2 | 1.5 |
| Incision | 7 | 5.2 |
| Blood | 8 | 5.9 |
| Others | 2 | 1.5 |
| Total | 135 | 100.0 |

A total of 15 cases (6.0%) had periodontal and related diseases; 7 (2.8%) of which had gingivitis, 2 (0.8%) juvenile periodontitis and 6 (0.2%) acute ulcerative gingivitis/cancrum oris.

Both benign and malignant tumours were diagnosed in 10 (4.0%) cases; fibrous lesions in 5 (2.0%) cases. There were 6 (2.4%) cases diagnosed of cysts and only 1 (0.4%) case of odontomes.

A total of forty two (16.9%) cases were diagnosed with injuries related to trauma. Of these about 28 (11.3%) were as a result of road traffic accidents. Six (2.4%) cases sustained fracture to the teeth and 8 (3.2%) sustained fracture to the jaws.

A total of 11 (4.4%) cases were seen to have one form of malocclusion or the other. A total of 33 (13.3%) cases had other dental diseases and conditions like cleft lip and palate, ankylosis, stains of the teeth etc.

extraoral radiological investigations. There was only 1 (0.9%) scan procedure carried out. Other investigations carried out were 12 (8.9%) biopsies and 8 (5.9%) blood investigations. Of the 12 biopsies carried out 3 (25%) were aspirations, 2 (16.7%) were excisional and 7 (58.3%) were incisional.

All the children and adolescents (100.0%) were attended to and had one form of treatment carried out. One hundred and twenty nine (59.4%) of the subjects had major and minor surgical procedures including extractions. Restorative/conservative procedures were carried out in 43 (19.8%) of the subjects, while periodontal therapy including scaling and polishing was done in 12 (5.5%) children and adolescents. Orthodontic feeding plate was fabricated for 2 (0.9%) cases. There were 19 cases (8.8%) of referrals to various units/departments within and outside the Dental and Maxillofacial Department. Twelve (5.5%) cases were periodically reviewed.

Table 6. Procedures carried in children and adolescents attending AKTH, Kano.

| Procedures carried out | Frequency | |
|--|------------|--------------|
| | n | % |
| Surgical Procedures | | |
| Extraction of teeth | 90 | 41.5 |
| Cyst enucleation | 3 | 1.4 |
| Excisional biopsy | 2 | 0.9 |
| Hemimandibulectomy | 1 | 0.5 |
| Surgeries | 10 | 4.6 |
| Repair of cleft lip/palate | 6 | 2.8 |
| Reduction & Immobilization | 8 | 3.7 |
| Suturing | 9 | 4.1 |
| Restorative/Conservative Procedures | | |
| Amalgam filling | 13 | 6.0 |
| Anterior jacket crown | 1 | 0.5 |
| Composite restoration | 6 | 2.8 |
| Dentures | 2 | 0.9 |
| Glass ionomer cement restoration | 12 | 5.5 |
| Pulpotomy | 1 | 0.5 |
| Root canal therapy | 5 | 2.3 |
| Splinting | 3 | 1.4 |
| Scaling & Polishing | 12 | 5.5 |
| Orthodontic feeding plate | 2 | 0.9 |
| Others | | |
| Referrals | 19 | 8.8 |
| Periodic review/Reassurance/ Counselling/Nutritional advice | 12 | 5.5 |
| Total | 217 | 100.0 |

Investigations carried out are shown in Table 5. Of the 217 cases seen, one hundred and thirty five cases (62.2%) were investigated. Eighty two cases (37.8%) did not require any investigations. Majority of the investigations carried out were radiological in nature 113 (83.7%). There were 96 (85.0%) intraoral and 16 (14.2%)

DISCUSSION

This survey showed a wide and varied scope in the oral and dental care of children and adolescents during a two year period of review in a newly established tertiary institution. In this study, toothache (pain) was the commonest complaint encountered by patients who presented for treatment at the Dental and Maxillofacial Surgery Department of Aminu Kano Teaching Hospital, Kano. Pain is a very potent factor that drives patients to seek dental treatment⁸. This is in agreement with previous findings⁹⁻¹¹. Aetiology of pain in these patients varied and was due to pulpitis, periodontal conditions, jaw fractures and possibly tooth fractures resulting from trauma sustained. Pain was an unlikely complaint from malaligned teeth.

More males than females were seen in this study. This finding may be attributed to the purdah system, a custom of keeping women from the sight of men other than their immediate family members. This custom is commonly practiced among people of the northern descents. Some of the potential female patients may hitherto have been prevented from accessing dental care at this tertiary institution as a result of this practice.

There were many cases with the complaint of broken teeth and jaws resulting from trauma (n=26, 12%). Traumatic experiences seem high in this population, and this was found to result in jaw and teeth fractures. Mandibular fracture was found to be the leading cause of non-tumour lesions in this environment¹². It was reported that facial trauma in Nigerian Africans are common¹³⁻¹⁶. This highlights the need for government to

enforce the legislation on wearing of crash elements by both drivers and riders of motorcycles as this has become a very popular mode of transportation with its attendant problems.

In the study, a significant number of children and adolescents were seen with the complaint of malaligned teeth (n=11; 4.4%). There exists a growing awareness of the populace on dental aesthetics and the need for orthodontic treatment especially among children of the elites¹⁷. The general dental practitioner has a role to play in referring such cases appropriately.

Complaints of facial defects resulting from congenital malformations of cleft lip and palate seem quite common in this study. Facial defect is also a common post-operative morbidity seen in patients in Kano¹².

Dental caries accounted for the highest number of oral diseases seen in this survey and it is a leading cause of dental pain, as it is an irreversible process. This finding has been similarly reported⁹⁻¹¹. Dental caries was reported to be commoner in the younger age groups reaching its peak at age 20-29 years¹⁷.

Dental caries is also known to be commonest cause of tooth loss because most patients present with advanced dental decay for which restorative treatment will not be possible. Complications arising from late presentation include dental abscess, grossly broken down crowns with retained roots and osteomyelitis in severe cases.

Radiographic methods of investigation made up of both intra- and extraoral techniques were employed extensively in diagnosing most of the conditions seen. However, this method may seem inadequate in performing specific diagnostic and clinical tasks and in providing a 3-dimensional representation of the maxillofacial hard tissues with minimal distortion.

Treatment given varied and included mainly minor and major surgeries including extractions and restorative procedures using different types of filling materials. This trend is attributed to advances in technology. This is not surprising as AKTH, the centre where the study was carried out is a tertiary institution established to serve four of eight states in the northern part of the country. It is hoped that more patients will take advantage of the facilities available to them at this centre.

However, periodontal and orthodontic treatments were minimally carried out except for the few cases of orthodontic feeding plates fabricated for infants with cleft lip and palate. There was no trained orthodontic specialist to treat orthodontic cases that presented at the health facility. It is not surprising however that periodontal treatment was minimally done in subjects in this study. Periodontal diseases are more prevalent in adults than in children¹⁷.

This study has highlighted the various oral and dental diseases seen, investigated and treated at the Department of Dental and Maxillofacial Surgery, Aminu Kano Teaching Hospital, Kano, Nigeria.

School health programmes to create dental awareness should be organised by local government councils. This would be effective in early detection of oral and dental diseases. Future planning of oral care services in this institution would include manpower development through training of resident doctors. This move would ensure adequate provision of all needed dental services for the population and the surrounding states that the institution serves.

It is recommended that the health facility acquires more sophisticated oral and maxillofacial imaging machines for its use to perform specific diagnostic tasks.

CONCLUSION

Dental caries and traumatic conditions remained the greatest causes of tooth mortality in this environment. However, these two conditions are preventable by and large. There must be a strong political will to deal with the issue of caries prevention on a large scale through water fluoridation. It is advocated that legislation on wearing of crash helmet to prevent traumatic conditions in the drivers and riders of motorcycles should be enforced.

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