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Dental treatment needs among students with disabilities in Sokoto, Nigeria

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Abstract

Background: Individuals with disabilities experience more dental problems and have more unmet dental needs, and face additional challenges accessing dental treatments. It is imperative therefore to carry out a study that would assess the dental treatment needs of this vulnerable population to aid the planning of appropriate oral health programs tailored towards their peculiarities.
Objective: To determine the dental treatment needs among students with disabilities in Sokoto, Nigeria
Methods: The study was a descriptive cross-sectional survey conducted in Sokoto State among students with disabilities. IBM SPSS version 23.0 was used to analyze data via descriptive statistics. The results were displayed in charts and frequency tables.
Results: Two hundred and thirty-six students with disabilities, 69 (29.2%) females and 167 (70.8%) males were recruited in the study. Preventive treatment need was the most required treatment need 65 (27.5%), it also accounted for the highest mean number of teeth per subject (0.86 ± 1.80) requiring treatment. The hearing-impaired group required the most treatments across the various treatment types [i.e. preventive treatment needs 26 (40.0%), conservative treatment needs 31 (53.4%), endodontic treatment needs 8 (44.4%), oral surgery treatment needs 13 (44.8%)], except in the prosthodontic treatment needs, which was required more by the intellectually impaired group 8 (42.1%).
Conclusion: The present study shows high dental treatment needs among students with disabilities in Sokoto, with preventive and restorative treatments accounting for the bulk of treatment required by the study population. The Hearing-impaired group had the most required treatment needs compared to others.

Keywords: Dental, treatment needs, disability, Students, Nigeria

Introduction

The Americans with Disabilities Act (ADA) defined disability as "(a) a physical or mental impairment that substantially limits one or more major life activities of such individuals; (b) a record of such an impairment; or (c) being regarded as having such impairment".[1] Simply put, persons with disabilities have difficulties learning and performing tasks at a level considered normal for those without such impairments.[2] As such, they would require special attention, needs, and care.

Children including students with disabilities especially those with severe impairment or of tender age depend on parents or caregivers for general care and oral care.[3] Sadly, a significant proportion of these parents or caregivers may have deficient knowledge of the need or importance of maintaining good oral hygiene,[4] thus increasing the possibility of high oral health care needs among these children with disabilities. Also, some caregivers or parents of students with disabilities

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may focus more attention on the disabling conditions of such students to the detriment of their oral health,[5,6] thus making them prone to developing oral diseases.

Several authorities have reported that individuals with disabilities experience more dental problems and have more unmet dental needs[7,8] such as dental caries, periodontal disease, poor oral hygiene, and tooth loss than their non-disabled counterparts.[3]

Developing nations commonly have limited access to dental health services for their citizens, as such dental problems are not treated most times, leading to pain, discomfort,[9] and complications. This may even be more challenging for citizens of these nations who live with disabilities due to the extra challenges to accessing optimal dental care namely, inadequate transport systems, inadequate access to wheelchairs, dearth of specialized health institutions for special needs individuals,[10-13] extra financial burden involved in managing associated health challenges of special needs individuals,[14] and an insufficient number of adequately trained dental professionals managing special needs individuals.[10,15]

Given the increased risk of oral disease among young individuals including students with disabilities and the additional challenges of accessing dental treatments among them, it is imperative, therefore, to carry out a study that would access the dental treatment needs of this vulnerable population. This would help in planning appropriate oral health programs tailored towards their peculiarities. It would also help in identifying the prevalent dental treatment needs and how to apportion available resources to optimally meet them.

Considering the paucity of such studies in Nigeria, particularly in northern Nigeria, therefore, this study aims to determine the dental treatment needs among students with disabilities in Sokoto, Nigeria.

Materials and method

This study was designed as a descriptive cross-sectional survey. Abdulrasheed Adisa Raji Special School, Sokoto State (the only special school in the state) was used for the study. All students (primary and secondary section) with disabilities, who were inclined to participate in the study and were in possession of signed informed consent forms by parental/guardian, were enlisted for the study. Those qualified based on the inclusion criteria above but were too ill or too uncooperative, and those absent in the period of the study were excluded from the study.

The students were sorted into four disability groups (hearing, visual, physical, and intellectual impairments) in accordance with the school's confirmed disability groups. Using a total population of 448 students with disabilities as obtained from the school's records, the sample size for the study population was calculated using Yamane's (1967) formula[28]

$$n=\frac{N}{1+N(e)^2}$$

A final sample size of 236 was gotten after adjusting for 10% non-respondent (NR).

Every participant selected for the study was recruited via systematic random sampling from each class. To ascertain the needed sample size per each class, a stratified random sampling formula as represented below was employed

(class population)/(total population (448))× sample size (236)=class sample size

$$\frac{\text{class population}}{\text{total population (448)}} \times \text{sample size (236)} = \text{class sample size}$$

Therefore, the overall number of participants per disability group was obtained by the summation of each class sample size for that specific disability group

Usmanu Danfodiyo University Teaching Hospital's Health Research Ethics Committee gave ethical clearance (UDUTH/HREC/2019/No.790) for this study. Sokoto State Ministry of Basic and Secondary Education granted permission for the use of the school. Informed consent or assent was obtained from the participants.

Clinical examination was carried out in the school field by a single examiner under adequate natural light with the aid of a mouth mirror and a periodontal probe. The participant sat on either a school chair or on his/her wheelchair where applicable, while the examiner stood behind or in front of the chair.

Each participant's treatment need(s) was identified, coded, and reported based on the following categories: No treatment needs: no treatment required; preventive needs: preventive/prophylactic treatment required, such as scaling and polishing, fissure sealant, and topical fluoride application;

conservative needs: conservative treatment required, such as one or more surface filling, and composite build up; endodontic needs: endodontic treatment required, such as pulpotomy, pulpectomy, pulp capping and root canal treatment; prosthodontic needs: prosthodontic treatment required, such as denture, crown, and bridge; oral surgical needs: oral surgery treatment required, such as extraction, incision and drainage.

All participants received oral hygiene instructions. The participants with urgent/emergency treatment needs were communicated to their parents/guardians through the school authority and were given written referrals to the nearby tertiary dental facility.

Data analysis was done using version 23.0 of IBM SPSS. Descriptive statistics were used to determine the sociodemographic characteristics, the dental treatment needs of participants, and the mean number of teeth requiring each treatment type. Also, the descriptive statistic was used to determine the dental treatment needs by the type of disability. The results were displayed in charts and frequency tables.

Results

Socio-demographics

Table 1 shows the socio-demographic characteristics. More than two-thirds of the study participants were males (n= 167; 70.8%). The hearing-impaired participants accounted for over half of the participants (n=124; 52.5%). Approximately 90% of the study participants were from the Hausa-Fulani ethnic group (n=213; 90.3%)

Dental Treatment Needs

Figure 1 reveals that preventive treatment needs accounted for the most required treatment needs (n=65; 27.5%). This was closely followed by conservative treatment needs (n=58; 24.6%).

When analysed for the mean number of teeth per subject requiring various treatments (table 2), preventive treatment needs also accounted for the highest mean number of teeth per subject requiring treatment (0.86 ± 1.80). Endodontic treatment needs had the lowest mean number of teeth per subject requiring treatment (1.10 ± 0.39)

Further breakdown of treatment needs by disability group (table 3) shows that the Hearing-impaired

Table 1.1: Variable notation and definition

Disability Type	Intellectually Impaired 54 (22.9)	Visually Impaired 41 (17.4)	Hearing Impaired 124 (52.5)	Physically Impaired 17 (7.2)
Gender		Male 167 (70.8)	Female 69 (29.2)	
Ethnic group	Hausa-Fulani 213 (90.3)	Ibo 4 (1.7)	Yoruba 14 (5.9)	Others 5 (2.1)

Figures in brackets = percentage

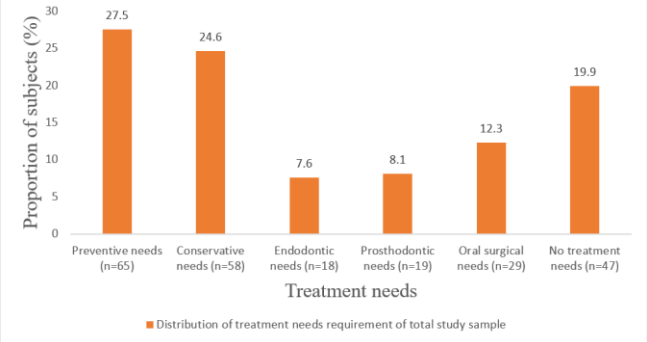

Figure 1: Treatment need requirement of the study sample

Table 2: Mean number of teeth per subject requiring various treatments

Treatment need	Mean ± SD
Preventive	0.86 ± 1.80
Conservative	0.42 ± 0.90
Endodontic	0.10 ± 0.39
Prosthodontic	0.12 ± 0.47
Oral surgical	0.18 ± 0.55

Table 3: Treatment need requirement per disability group

Disability Type	Preventive needs n (%)	Conservative needs n (%)	Endodontic needs n (%)	Prosthodontic needs n (%)	Oral surgery needs n (%)
Intellectually impaired	22 (33.8)	17 (29.3)	6 (33.3)	8 (42.1)	11 (37.9)
Visually impaired	11 (16.9)	8 (13.8)	2 (11.1)	2 (10.5)	3 (10.4)
Hearing impaired	26 (40.0)	31 (53.4)	8 (44.4)	6 (31.6)	13 (44.8)
Physically impaired	6 (9.3)	2 (3.5)	2 (11.2)	3 (15.8)	2 (6.9)

n= frequency, % = percentage

group required the most treatments across the various treatment types [preventive treatment needs (n=26; 40.0%), conservative treatment needs (n=31; 53.4%), endodontic treatment needs (n=8; 44.4%), and oral surgery treatment needs (n=13; 44.8%)]. The exception was in the prosthodontic treatment needs, which were required more by the intellectually impaired group (n=8; 42.1%)

Discussion

The majority of participants in this study were males. This was in tandem with the findings of earlier studies in Nigeria,3 South Africa,[16] and India.[17] These studies also reported a majority of male participants in their studies. As reported by the research of Newacheck et al.[18] conducted in the United States of America, the likelihood of having a special need was about one-third more in males than females. However, Uwayezu et al.[19] in Rwanda reported a contrary finding of a greater proportion of female participants in their survey among children with disabilities

The preventive/prophylactic treatment need of this study was 27.5%. It was much lower than the report of several other authors. Oredugba and Akindayomi3 (53.7%) in Lagos, Nigeria, Eigbobo et al.[20] (46.7%) in Port Harcourt, Nigeria, and Alkhabuli et al.[21] (41.0%) in the United Arab Emirates. The restorative (i.e., conservative + endodontic + prosthodontic) treatment need of this study was 40.3%. This was similar to the 46.2% recorded by Oredugba and Akindayomi[3] but much lower than the 80.9% recorded by Eigbobo et al.[20] The oral surgical need (mainly extractions) of this study was 12.1%. This was in concordance with the 13.0% reported by Alkhabuli et al.[21] but much higher than the 3.7% reported by Oredugba and Akindayomi.[3] The observed differences in the dental treatment need requirement recorded across the various studies may be attributable, to the differences in the exposure to oral health care, type of disability, degree of disability, and study area of the various study population.

In general, preventive and restorative treatments accounted for the bulk of treatment required by the study population and this was in agreement with the reports of other authors.[21-22] Preventive and restorative treatments also accounted for the highest mean number of teeth requiring treatments. Possible reasons for high preventive and restorative treatment need among the special needs population have been reported by authors to include poor coordination and weakness of the muscle hindering routine daily oral hygiene,[5] poor manual dexterity as observed in some individuals with special needs,[15] lack of cooperation with home care behaviours such as toothbrushing leading to plaque accumulation and limited exposure to topical fluoride,[23] impact of their medical condition on gait and balance leading to frequent falls and fracture of anterior teeth,[20] intake of sweetened medications, and frequent intake of cariogenic snacks used as a pacifier by parents/guardians leading to dental caries.[15] Thus, making these special groups of persons require preventive treatment needs, such as scaling and polishing, fissure sealing, topical fluoride application, and restorative treatment needs such as one or more surface filling, composite build-up, various pulp treatment procedures, denture, crown and bridge.

When treatment needs were assessed by the type of disability, this study showed that the Hearing-impaired group, required the most treatments across the various treatment types, except for prosthodontic treatment. A possible reason for the high dental treatment needs by the Hearing-impaired group across the various categories of treatment required, maybe that the hearing-

impaired subjects may experience communication barriers both in understanding the importance of good oral practice and in conveying oral problems to parents, guardians, and caregivers hence, the high level of unmet dental needs.

In total, 80.1% of the population required dental treatments (with only 19.9% having no need for treatment). This was much higher than the 52.8% reported by Mokhtar et al.[22] Generally, authors have reported high dental treatment needs among children, young adults, and students with disabilities, with many reporting it to be higher among those with disabilities than in those without disabilities.[5,16,22,24]

It is interesting to note that a majority of the dental treatment needs that were observed in this study required non-complex procedures for their treatments. That the needs were unmet indicates a lack of utilization of dental services by this study population. The reasons reported by authors for the poor utilization of dental services among children with disabilities include the low socioeconomic status of parents and guardians, inadequate information, and education of caregivers, parents, and guardians, and the daunting logistics involved for special needs individuals to access routine check-ups and timely treatment in dental facilities, and lastly, the high dental treatment fees and the poor attention given to dental treatment.[25-27]

Conclusion

The present study shows high dental treatment needs among students with disabilities in Sokoto, with preventive and restorative treatments accounting for the bulk of treatment required by the study population. The Hearing-impaired group had the most required treatment needs compared to others. Therefore, this study population would benefit from prompt and sustained dental care with more emphasis on preventive and restorative treatment and more attention given to the hearing-impaired group.

Conflict of interest

Authors have no conflict of interest

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