

Oral Health Status of Children with Special Needs Attending University of Abuja Teaching Hospital, Gwagwalada FCT Abuja, Nigeria (2020–2025)

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Abstract

Original Research Article

Children with special needs face substantial barriers to oral health due to physical, cognitive, and behavioral limitations. Data on this population in Nigeria's Federal Capital Territory remain scarce. To evaluate the oral health status of children with special needs attending the University of Abuja Teaching Hospital (UATH), Gwagwalada, Nigeria (2020–2025). A retrospective cross-sectional study reviewed records of 33 children with special needs. Data on socio-demographics, disability type, oral hygiene status (Simplified Oral Hygiene Index, OHI-S), and dental visit frequency were extracted. Analysis used SPSS version 26 with Chi-square tests ($p < 0.05$). Dental visits increased from 3 (9.1%) in 2020 to 9 (27.3%) in 2024, yet 15 children (45.5%) had never attended a dental visit. Males constituted 19 (57.6%); mean age was 10.6 years ($SD = 3.0$). Most children had poor oral hygiene (16, 48.5%), followed by fair (13, 39.4%) and good (4, 12.1%). Autism Spectrum Disorder was most prevalent (9, 27.3%), followed by Cerebral Palsy (8, 24.2%), Down Syndrome (6, 18.2%), and Epilepsy/Intellectual Impairment (5, 15.2% each). No significant association existed between disability type and oral hygiene status ($\chi^2 = 4.027$, $df = 8$, $p = 0.855$). However, dental visit frequency was significantly associated with oral hygiene status ($\chi^2 = 13.197$, $df = 6$, $p = 0.040$). Oral health among children with special needs at UATH is poor. Regular dental visits significantly improve outcomes, highlighting the need for caregiver education, dental homes, and improved access to specialized care.

Keywords: Oral health, special needs children, oral hygiene status, care utilization, disability, Nigeria.

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INTRODUCTION

Oral health is foundational to general systemic health and quality of life (World Health Organization, 2022). Children with special healthcare needs experience significant challenges in achieving baseline oral health compared to their typically developing peers (American Academy of Pediatric Dentistry, 2021). Special needs encompass physical, developmental, mental, sensory, behavioral, cognitive, and emotional impairments requiring customized medical management (Gupta *et al.*, 2020).

These physical and neurodevelopmental barriers restrict manual dexterity, self-care comprehension, and cooperation during daily brushing (Allsop *et al.*, 2021). Consequently, these populations present with high plaque accumulation, gingival disease, and untreated dental caries globally (Srivastava *et*

al., 2022). Many children with cognitive or muscular syndromes also suffer from malocclusion, prolonged oral clearance, and salivary dysfunction secondary to daily medication (Gaur & Nayak, 2022). Anticonvulsants, sedatives, and psychotropic medications can cause xerostomia or drug-induced gingival overgrowth, establishing retention niches for pathological biofilm (Kumar *et al.*, 2023). Caregivers often implement softened, high-carbohydrate diets to mitigate swallowing difficulties, inadvertently creating an acidogenic microenvironment (Fiske *et al.*, 2021).

Children with special needs in Nigeria's Federal Capital Territory face severe plaque accumulation and periodontal disease-causing premature tooth loss, chronic pain, and masticatory degradation (Onyebuchi *et al.*, 2022). Despite UATH's role as a primary pediatric referral center, there is an absence of recent

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comprehensive data on oral hygiene metrics for special needs cohorts (Aborisade *et al.*, 2024). This gap impedes planning of structured preventative programs (Ndukwe *et al.*, 2021). Caregivers also face socioeconomic limitations, geographic distance to specialist clinics, and lack of oral health education, delaying clinical identification (Bello *et al.*, 2021).

This study addresses these data deficits by evaluating oral health status and clinical patterns among children with special needs attending UATH (2020–2025). Specific objectives were to: (1) determine yearly trends in oral hygiene assessment visits; (2) describe socio-demographic distribution; (3) categorize oral hygiene status using OHI-S; and (4) assess associations between disability type, care utilization, and oral hygiene severity.

MATERIALS AND METHODS

Study Design and Setting

This retrospective descriptive study reviewed records of children with special needs managed at the Child Dental Health Clinic, UATH, Gwagwalada, between January 2020 and December 2025. UATH is a major tertiary referral center serving the FCT and neighboring states.

Study Population

All pediatric patients with special needs aged 2–18 years with documented cognitive, physical, sensory, or behavioral impairments were included. Total population sampling (complete enumeration) yielded 33 eligible records.

Inclusion criteria:

(1) age 2–18 years with recognized special healthcare need; (2) comprehensive intraoral

examination documented between 2020–2025; (3) complete OHI-S, gingivitis, halitosis, missing/carious/filled teeth data; (4) clear demographic information.

Exclusion criteria:

(1) missing or illegible demographic details; (2) exclusively healthy, typically developing children; (3) incomplete oral health index data; (4) records outside the study timeframe.

Data Collection

A structured, pre-tested proforma extracted: socio-demographics (age, sex); primary diagnosis and medications; OHI-S scores (Good, Fair, Poor); secondary findings (caries, gingival inflammation, missing/filled teeth, halitosis); and provisional diagnosis with follow-up history. Ethical clearance was obtained from the UATH Institutional Health Research Ethics Committee. Patient anonymity was strictly maintained.

Statistical Analysis

Data were compiled in Microsoft Excel 2021 and analyzed using SPSS version 26.0. Descriptive statistics (frequencies, means, standard deviations, percentages) summarized baseline features. Chi-square tests (and Fisher's exact tests where cell counts were limited) evaluated associations. Statistical significance was set at $p < 0.05$.

RESULTS

Yearly Distribution of Assessment Visits

Visits increased progressively from 2020 to 2025, peaking in 2024 (9, 27.3%) and lowest in 2020 (3, 9.1%). The years 2021, 2022, and 2023 recorded 5 (15.2%), 4 (12.1%), and 4 (12.1%) children respectively.

Table 1: Yearly Distribution of Oral Hygiene Assessment Visits

Year	Frequency (n)	Percentage (%)
2020	3	9.1
2021	5	15.2
2022	4	12.1
2023	4	12.1
2024	9	27.3
2025	8	24.2
Total	33	100.0

Care Utilization Frequency

The majority of children (15, 45.5%) had never attended a dental visit. Ten (30.3%) reported one visit, 4

(12.1%) reported two visits, and 4 (12.1%) reported three or more visits.

Table 2: Care Utilization Frequency

Visit Frequency	Frequency (n)	Percentage (%)
0 Visits	15	45.5
1 Visit	10	30.3
2 Visits	4	12.1
3+ Visits	4	12.1
Total	33	100.0

Socio-Demographic Distribution

Males constituted 19 (57.6%) and females 14 (42.4%), with a male-to-female ratio of 1.4:1. Ages ranged from 6 to 15 years (mean = 10.6 years, SD = 3.0).

The most frequent age groups were 7, 9, 12, and 15 years, each with 4 (12.1%) children.

Table 3: Socio-Demographic Distribution

Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	19	57.6
	Female	14	42.4
Age (Years)	6	3	9.1
	7	4	12.1
	8	2	6.1
	9	4	12.1
	10	3	9.1
	11	3	9.1
	12	4	12.1
	13	3	9.1
	14	3	9.1
	15	4	12.1
Total		33	100.0

Baseline Oral Hygiene Status

The majority had poor oral hygiene (16, 48.5%), followed by fair (13, 39.4%) and good (4, 12.1%).

Table 4: Baseline Oral Hygiene Status (OHI-S)

OHI-S Category	Frequency (n)	Percentage (%)
Good	4	12.1
Fair	13	39.4
Poor	16	48.5
Total	33	100.0

Disability Type by Oral Hygiene Status

Autism Spectrum Disorder was most prevalent (9, 27.3%), followed by Cerebral Palsy (8, 24.2%), Down Syndrome (6, 18.2%), and Epilepsy and

Intellectual Impairment (5, 15.2% each). Among children with Cerebral Palsy, 5 (62.5%) had poor oral hygiene. Among those with Autism, 5 (55.6%) had fair oral hygiene.

Table 5: Disability Type by Oral Hygiene Status (OHI-S)

Disability Type	Good n (%)	Fair n (%)	Poor n (%)	Total n (%)
Autism Spectrum	1 (11.1)	5 (55.6)	3 (33.3)	9 (100.0)
Cerebral Palsy	1 (12.5)	2 (25.0)	5 (62.5)	8 (100.0)
Down Syndrome	1 (16.7)	2 (33.3)	3 (50.0)	6 (100.0)
Epilepsy	1 (20.0)	1 (20.0)	3 (60.0)	5 (100.0)
Intellectual Impairment	0 (0.0)	3 (60.0)	2 (40.0)	5 (100.0)
Total	4 (12.1)	13 (39.4)	16 (48.5)	33 (100.0)

The Chi-square test showed no statistically significant association between disability type and oral hygiene status ($\chi^2 = 4.027$, $df = 8$, $p = 0.855$).

Table 6: Chi-Square Test — Disability Type and OHI-S

Test	Value	df	Significance (2-sided)
Pearson Chi-Square	4.027 ^a	8	0.855
Likelihood Ratio	4.630	8	0.796
N of Valid Cases	33		

^a 15 cells (100.0%) have expected count less than 5. Minimum expected count = 0.61.

Care Utilization by Oral Hygiene Status

Among children with no dental visits ($n = 15$), 11 (73.3%) had poor oral hygiene. Among those with

three or more visits ($n = 4$), 2 (50.0%) had good and 2 (50.0%) had fair oral hygiene; none had poor oral hygiene.

Table 7: Care Utilization by Oral Hygiene Status (OHI-S)

Visit Frequency	Good n (%)	Fair n (%)	Poor n (%)	Total n (%)
0 Visits	1 (6.7)	3 (20.0)	11 (73.3)	15 (100.0)
1 Visit	1 (10.0)	5 (50.0)	4 (40.0)	10 (100.0)
2 Visits	0 (0.0)	3 (75.0)	1 (25.0)	4 (100.0)
3+ Visits	2 (50.0)	2 (50.0)	0 (0.0)	4 (100.0)
Total	4 (12.1)	13 (39.4)	16 (48.5)	33 (100.0)

A statistically significant association was found between dental visit frequency and oral hygiene status ($\chi^2 = 13.197$, $df = 6$, $p = 0.040$).

Table 8: Chi-Square Test — Care Utilization and OHI-S

Test	Value	df	Significance (2-sided)
Pearson Chi-Square	13.197 ^a	6	0.040
Likelihood Ratio	13.461	6	0.036
N of Valid Cases	33		

^a 10 cells (83.3%) have expected count less than 5. Minimum expected count = 0.48.

DISCUSSION

This study evaluated oral health status among children with special needs at UATH (2020–2025). Dental visits increased progressively, peaking in 2024 (9, 27.3%), possibly reflecting improved awareness and post-COVID-19 service recovery. However, 15 children (45.5%) had never attended a dental visit, consistent with findings from Kano, Nigeria (Okolo *et al.*, 2024), and Burkina Faso, where 74.0% had never visited a dentist (Gare *et al.*, 2024). Barriers include stigma, communication issues, and lack of trained providers (Al-Mashhadani *et al.*, 2024).

Male predominance (19, 57.6%) aligns with Kano findings (Okolo *et al.*, 2024), possibly reflecting sociocultural preferences for male healthcare access in northern Nigeria. The mean age of 10.6 years and absence of children below 6 years suggest early dental home establishment is not prioritized, despite recommendations by age one (American Academy of Pediatric Dentistry, 2021).

The high prevalence of poor oral hygiene (16, 48.5%) mirrors findings from Indonesia (Srivastava *et al.*, 2022) and Kano (Okolo *et al.*, 2024). Contributing factors include limited dexterity, cognitive impairment, caregiver dependency, carbohydrate-rich soft diets, and xerostomic medications (Kumar *et al.*, 2024; Fiske *et al.*, 2021).

Cerebral Palsy was associated with the highest proportion of poor oral hygiene (5, 62.5%), consistent with neuromuscular coordination challenges (Kumar *et al.*, 2024). Down Syndrome children (3, 50.0% poor) reflect impaired immunologic responses and hypotonia (Neville *et al.*, 2024). Autism children predominantly had fair hygiene (5, 55.6%), suggesting some caregiver support, though sensory and behavioral barriers persist.

Despite observed differences, no statistically significant association existed between disability type and oral hygiene status ($p = 0.855$). This suggests that common barriers—caregiver dependency,

communication difficulties, limited access—affect children across disability types similarly (Al-Mashhadani *et al.*, 2024). The small sample size ($n = 33$) also limits statistical power.

The significant association between dental visit frequency and oral hygiene status ($p = 0.040$) is a key finding. Children with no visits had the highest prevalence of poor hygiene (11, 73.3%), while those with three or more visits had none with poor hygiene. This aligns with Mifsud *et al.*, (2024) and Dsilva (2026), who demonstrated that caregiver training and regular dental visits significantly improve oral health. However, even among children with one visit, 4 (40.0%) still had poor hygiene, suggesting single visits are insufficient for sustained improvement (Special Olympics, 2025).

Limitations:

Small sample size ($n = 33$), single-center design, reliance on clinical records with potential incomplete data, absence of a comparison group, and lack of assessment of dietary habits, socioeconomic status, and caregiver education. Longitudinal studies are needed.

CONCLUSION

Oral health among children with special needs at UATH is poor, with high prevalence of fair and poor oral hygiene. While disability type does not significantly influence oral hygiene severity, regular dental visits are a key modifiable factor significantly improving outcomes. Targeted interventions—caregiver education, dental homes, and enhanced access to specialized services—are urgently needed.

Recommendations

1. Targeted oral health promotion for children with special needs and caregivers, including hygiene education, dietary counseling, and emphasizing regular dental visits.
2. Caregiver training programs to equip caregivers with skills for effective oral care.

3. Establishment of dental homes for every child with special needs.
4. Reduction of barriers through specialized clinics, training in special care dentistry, and financial support.
5. Integration of oral health into overall health management via medical-dental collaboration.
6. Future research with larger samples, multicenter designs, and prospective methodologies.

Author Contributions

Adamu Kabiru: Conceptualization, methodology, data collection, formal analysis, writing—original draft preparation.

Justina N. Ngwu: Supervision, validation, writing—review and editing. All authors read and approved the final manuscript.

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Conflict of Interest

The authors declare no conflicts of interest.

Data Availability

The data supporting the findings of this study are available from the corresponding author upon reasonable request, subject to ethical restrictions.

Ethics Approval

Ethical clearance was obtained from the UATH Institutional Health Research Ethics Committee prior to data collection. Administrative permissions were secured from the Heads of the Dental Departments to access historical record archives.

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