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The Oral Health Status of Person with Special Needs in Kumasi

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Abstract

Background: The most prevalent non-communicable disease worldwide is oral health-related disease, with dental caries and periodontal conditions being common. Oral health status significantly impacts overall health and quality of life. Barriers to dental care affect children with special needs. This study evaluates the oral health status and treatment requirements of people with special needs. **Methodology:** This descriptive cross-sectional study in Kumasi, Ghana examined oral health status among people, 121 children with special needs over two months, in June-July 2022. Dental caries, periodontal changes, malocclusion, and trauma were assessed. The data was analyzed using SPSS 20.0. **Results:** The oral health status among people with special needs in this study was generally moderate, with a range from very good to very poor. The prevalence of dental caries was 37%, with a mean DMFT score of 2.82. Periodontal health showed unsatisfactory indicators such as mobile teeth, poor gingival health, high plaque scores, and the presence of halitosis. **Conclusion:** This descriptive study aimed to provide baseline data on the oral health status of special needs students in Kumasi, addressing the lack of knowledge in this area. It highlighted the importance of dental care in maintaining good oral health and overall well-being in individuals with special needs. Coordinated efforts by dental professionals are needed to provide dental health education and preventive interventions for these children.

Keywords

Special Needs, Oral Health, Dental Caries, Periodontal Diseases, Malocclusion

1. Background Information

Oral health diseases are a global non-communicable burden known to affect about 3.5 billion people globally including special needs persons [1], of which dental caries and periodontal disorders are the highest contributing factors. Others include tooth loss, oral cancers, congenital anomalies, craniofacial disorders, and various infections. These diseases or disorders affect the quality of life of affected individuals as well as an economic burden [2]. Persons with special needs are most disadvantaged and neglected due to sociodemographic variables and limitations including non-cooperation, communication difficulties, fear, and negative attitudes [1]. Special needs persons are individuals with difficulty in functioning as their peers would tend to have worse physical, mental, and social functioning, academic and socioeconomic status, as well as health [1]. The condition may be congenital, developmental, or acquired through disease, trauma or environmental causes and may impose limitations in performing daily self-maintenance activities or substantial limitations in a major life activity [1]. Oral health affects general health, quality of life, biology, psychology, and social connections of a person [3]. Despite being preventable, there has been a rising prevalence in low- and middle-income [1].

About 8% of Ghanaians have special needs or difficulty in performing activities, which increased from 3% in the 2010 census, with females recording higher prevalence, and a higher prevalence in the Ashanti region [4]. However, the tendency to focus on medical needs rather than dental treatment of special needs persons exists, which may be due to numerous barriers and neglect of oral health care, resulting in high unmet oral health needs [5].

The Sustainable Development Goals (SDGs) promote well-being, health, and universal health care for everyone, including those with special needs [6], with SDG 3 prioritizing dental health as part of healthcare. The World Dental Federation, WHO, and IADR have set oral health targets for 2020 to minimize the health and psychological effects of oral illnesses [7]. Although special needs patients' oral health has improved, Kumasi, Ghana's condition is still poorly understood. This study will analyze the oral health of special needs individuals in selected Kumasi metropolitan institutions to inform future Ghanaian evaluations. Although notable developments have been recorded in dentistry through the decades, the problem of delivering good oral care to children with special health care needs persists; thus, the significance of the paper to add to the knowledge available to this population especially in Kumasi, Ghana on the status of their oral health as well as their treatment needs.

2. Objectives

2.1. Main

To determine the prevalence of oral health diseases/disorders among people with special needs in designated institutions.

2.2. Specific Objectives

The specific objectives of this study are fourfold:

- To assess the prevalence of dental caries among people with special needs.
- To assess the periodontal health among individuals with special needs.
- To describe malocclusion and traumatic injuries amongst people with special needs.
- To determine the treatment needs of these individuals of study participants.

2.3. Justification

This study seeks to acquire data on the oral health status and treatment needs of individuals with special needs, as well as serve as baseline data for reference. The reluctance of caretakers and health personnel in attending to the oral health needs of such persons impacts on their oral health status. This will inform the planning and implementation of oral health programmes and education for these individuals as well as their caretakers and the Dental health team.

3. Literature Review

3.1. Dental Status of Individuals with Special Needs

In 2008, 600 million individuals worldwide had impairments. 400 million of them were in developing nations and 80 million in Africa. 40% of Africans have a handicap, with 10% - 15% of school-age children having a disability [8]. From 1.4% in the 0 - 14 age group to 3.1% in the 15 - 64 age group to 14% in the 65+ age group, disability rates increased with age. The 2020 census showed an 8% growth to 31 million people with special needs in Ghana, with the Ashanti region having the highest record and higher prevalence in females [4]. The barriers and neglect to dental treatment increase the prevalence of oral diseases in this population and tend to face frequent, oral inequity compared with people without disabilities [1].

3.2. Oral Hygiene Status of Special Needs People

Oral hygiene is generally poor amongst these groups of people due to the difficulties and other variables among people with special needs. They are more susceptible than the general population to oral health problems with numerous untreated oral illnesses which is a growing global problem [9].

Children with special needs most often than not, do not grasp the significance of preventive oral care, thus lacking cooperation for basic oral practices. Lack of knowledge on preventive methods for good oral hygiene on the part of the caregivers as well as the general neglect for such individuals play a significant role in the overall oral hygiene status of such individuals [5] [10].

3.3. Prevalence of Oral Diseases in Special Needs People

Major global public health issues in oral health include dental caries, periodontal disease, tooth loss, oropharyngeal cancer, oral mucosal lesions, and HIV/AIDS-

related oral disease. Latin America has shown higher incidence and prevalence of untreated cavities, severe periodontal disease, and complete tooth loss compared to global averages in a study done in 2015 [11].

Dental Caries and Periodontal Disease

Dental caries is a widespread non-communicable disorder affecting 2.3 billion individuals with permanent tooth decay and 560 million children with deciduous tooth decay [1]. Dental caries is more prevalent in low and middle-income countries with high sugar consumption and low socioeconomic status. The disease is caused by the transformation of oral biofilm into an acidogenic, aciduric, and cariogenic population due to frequent carbohydrate consumption. Genetic, physiological, environmental, and behavioral factors along with inadequate daily mechanical disruption of dental biofilm, contribute to the formation of dental caries [12]. Children with special needs are at higher risk due to impaired motor function and altered saliva properties, especially in individuals with Down syndrome, prone to oral pathogens [13]. Global prevalence rates of about 32.6% in India, 4% - 40% in Nigeria, and 13% in sub-Saharan Africa [14] [15] have been recorded and a prevalence of about 13% over the past three decades in Ghana, with higher rates among low- and middle-income individuals [16].

Periodontal disease is defined by the Community Periodontal Index of Treatment Needs (CPITN) and clinical attachment loss (CAL) as per the WHO criteria [1]. It is known to result from poor oral hygiene with an accumulation of plaque biofilm, which may be further worsened by chronic and immunocompromising diseases such as diabetes [17].

In a study by Blankson *et al.* of institutionalized hearing-impaired children, poor gingival health with a 71.1% prevalence of periodontal problems was observed, associated with inadequate brushing techniques. The prevalence of periodontal disease varies from 30% to 90% among selected populations in Nigeria but was found to be 30.4% in peri-urban areas in Ghana [18].

Some medications given special needs individuals may contain high sugar contents, or cause gingival overgrowth or xerostomia, increasing their risk further or worsening their chances for dental caries and poor periodontal health [19].

Traumatic Dental Injuries

Traumatic dental injuries, refers to injuries ranging from enamel infraction to complete loss of natural teeth, as defined by the WHO. The prevalence of dental trauma is approximately 15% in Latin American school children and 5% - 12% in Middle Eastern children aged 6 to 12. In industrialized countries, traumatic oral injuries range from 16% - 40% among 6-year-olds and 4% - 33% among 12 - 14-year-olds, often attributed to sports, unsafe environments, road accidents, or violence [20]. Children with special needs as a result of a brain injury or genetic conditions sometimes suffer seizures which may be intense and cause dental injuries [21].

Oral Mucosal Lesions and Oral Cancer

Leukoplakia, a common oral condition characterized by white patches, had a prevalence ranging from 1.1% in Cambodia to 3.6% in Sweden. Erythroplakia, a less common condition, has a population prevalence of 1% or less. Oropharyngeal cancers are more common in developing countries, with varying incidences from 1 - 10 cases per 100,000 inhabitants. India has a higher incidence at 12.6 per 100,000 population, and other regions such as Denmark, France, and Germany also show rising incidences [22].

Developmental Disorders

These disorders are related to congenital diseases of the enamel and dentine, problems with teeth size, shape and number and craniofacial birth defects such as cleft of the lip and/or palate. Delayed tooth eruption is a common occurrence in children with special needs, which may extend about 2 - 3 years. They also present with malformed teeth such as peg shaped or hypomineralized teeth [19].

Malocclusion

Malocclusion, a dental deviation, can significantly impact an individual's quality of life. It is prevalent in various conditions such as Down syndrome, cerebral palsy, and learning impairments. Malocclusions are more common in orthopedically handicapped groups due to factors like dyskinetic movement and buccal breathing. Individuals with conditions like cerebral palsy or epilepsy may experience worsened handicaps due to malocclusion. People with Down syndrome often exhibit anterior crossbite and Angle Class III malocclusion. Skull and jaw growth defects, thumb sucking, mouth breathing, and tongue positioning contribute to malocclusion in these groups [23].

Crowding and malalignment of teeth is also a common occurrence due to tooth malformations. This contributes further to general oral health issues, particularly, periodontal. Continuous grinding of the teeth especially in individuals with cerebral palsy also alters the occlusion which may result more dental issues [24].

3.4. Treatment Needs

Dental care is commonly an unmet service requirement, especially for individuals with special needs. Developing countries often prioritize pain relief and emergency care over preventive and restorative dental services [5] [10] [25]. Poor dental health negatively impacts the quality of life for children, adults, and the elderly, affecting growth, development, digestion, nutrition, school attendance, speech, facial emotions, and chewing abilities [9]. The Global Burden of Disease 2015 revealed a large population with untreated oral diseases, including caries, periodontal disease, and tooth loss. In 2010, about 35% of the global population had untreated permanent teeth caries and about 7.8% of the child population for deciduous teeth [11]. Malocclusion, although not a disease, has a significant impact on individuals' quality of life and is prevalent in various conditions such as Down syndrome, cerebral palsy, and genetic disorders. Dental care for individuals with special needs is often unattended due to the prioritization of other medical con-

ditions. Dentists may be hesitant to treat these patients due to inadequate knowledge and technical skills [25].

Patients with special needs often require general anaesthesia for dental treatment due to their inability to comply or communicate effectively. Establishing a rapport between the patient, parent/caregiver, and dental team is crucial for successful treatment [10] [25]. Assessment and treatment planning should consider the social burdens faced by patients and caregivers, along with their physical and medical needs, to enhance overall patient satisfaction. The absence of these however places such individuals with greater unmet dental needs than the general population [9].

Although people with special needs tend to have a lot of unmet needs, the few that may have received some form of treatment are usually an extraction, less likely for a filling to be done for decayed teeth [26].

Access to Healthcare

Access to dental care for individuals with special needs is influenced by various factors such as the attitudes and lack of preparedness of the dental team, financial considerations, self-image issues, health concerns, and physical accessibility. Lack of awareness, stigmatization, and stereotypes contribute to difficulties in accessing general health treatments for individuals with intellectual disability [27] [28]. A study by the WHO observed that people with special needs, as compared to those without, were about four times more likely to be frustrated with the care administered and nearly three times more likely to report being overlooked in receiving the necessary treatments [3]. Other studies suggest about 77.1% of the general population have access to regular dental care but much less in children with disabilities with about 14.4% of patients with intellectual disabilities reported not to have received any dental treatment in the preceding 5 as against about only 8% of the general population [19].

4. Methodology

4.1. Study Design, Area, and Sample Size

This was a descriptive cross-sectional study conducted with a non-probability convenience sampling in special schools located in Kumasi, currently with a populace of about 3.6 million in June-July 2022. The schools involved were both special need schools for individuals with intellectual disability, which included people with Down syndrome, cerebral palsy, autism, creatinine, intellectual deficit. The first is Garden City Special School located at Asokore Mampong and Community Vocational Special School, Deduako.

The sample size was calculated using Cochran formula,

$$\text{Sample size} = \frac{1.96^2 \times P(1-P)}{D^2}$$

where P refers to expected proportion of incidence in population-based on previous studies (30.4%); [18] and D refers to absolute error or precision of 5%. A sample size of 145 individuals was calculated and a total of 121 participants were

available to be examined.

4.2. Inclusion and Exclusion Criteria

Participants of the study included current students of the various schools, present on the days of data collection, and were willing and fit to partake in the study. Verbal consent was obtained from the various participants prior to intraoral examination. Students who did not consent to the study were not coerced or included in the study, thus excluded from the study.

4.3. Data Collection

Over a period of two months, data was collected from 120 students with special needs through the use of a questionnaire and a clinical examination. WHO indices were used for the clinical examination. Information on age, and medical history was obtained from caretakers. Oral examination was done using direct visual screening with tongue blades, face masks and disposable gloves in broad daylight with assistance from the teachers/caretakers in communicating with the students.

Periodontal disease was assessed clinically using gingival health and plaque scores, and dental caries were evaluated using DMFT scores. Malocclusion was recorded using Angle's classification. Oral lesions, trauma, and other anomalies were also documented. Referrals and oral hygiene education were provided [29].

4.4. Data Processing and Analysis

Following a descriptive and inferential analysis, all variables were entered and statistically analyzed using R and the Statistical Package for the Social Sciences (SPSS) software version 20.0 for Windows. Data analysis involved frequency generation, mean with standard deviations, chi-square, and Fischer's exact test.

5. Results

The study aimed to assess the oral health status, prevalence of oral diseases, and treatment needs of intellectually disabled students at Garden City Special School and Deduako Community Vocational School. A total of 121 students participated in the study, with a response rate of 83%.

5.1. Socio-Demographic

Table 1 shows the demographics of the study population (n = 121) with 57% of participants from Garden City Special School (GCSS) and 43% from Community Vocational Special School (CVSS). Of this, sixty-seven (55%) were males and 45% females which was consistent with a study conducted by Dheepthasri *et al.* [30].

The mean age of participants was 22.42 years with a standard deviation of 7.75, median age was 21 years, and the interquartile range was 18 - 25, according to a study by Niraj *et al.* [31].

Table 1. Socio-demographics of study participants.

Description	Number	Percentage%	p-value[1]
School			
GCSS	69	57	0.10
CVSS	52	43	
Gender			
Male	67	55	0.029
Female	54	45	
Total	121	100	

Table 2 shows the distribution of disease causes of the various special needs recorded. Cerebral palsy was highest with a percentage of 28.1% followed by Down syndrome with 26.4%. The third prevalent condition was Autism (14.9%), the fourth, Asymptomatic IQ (13.2%) the fifth, Epilepsy (6.6%). Cretinism, Microcephaly and Low IQ O/A Birth Asphyxia all had a frequency of three accounting for 2.5% each of the distribution. Low IQ O/A Meningitis accounted for 1.7% and the least ADHD with one person accounting for 0.8%.

Possibly, the most common special need in Kumasi, Ghana, could be cerebral palsy, according to a study by Kyeremanteng in Ghana, at least 1 in every 300 births [32].

5.2. Oral Health Status

Dental Caries

31% (37) of the population had a caries experience, either with present carious lesions, or missing teeth on account of a carious lesion; none of them had their teeth filled. A mean DMFT score of 2.81 was obtained, which is moderate using the WHO classification score. 29 (78%) had decayed teeth, 14 (37%) had missing teeth and no filled teeth were recorded. Table 3 shows caries experiences observed with the various special needs present in the sampled population.

It was observed people who had Down syndrome (10 of 37) had the highest caries experience from our study although not statistically significant.

Periodontal Health

Six (6) individuals involved in the study of the oral health status of people with special needs had missing teeth on account of periodontal conditions, with one participant recording the highest record of 21 missing teeth (completely edentulous maxilla), and the lowest being 1 tooth. Thirty-five (29%) participants had halitosis as shown in Table 4. Table 5 shows plaque accumulation using Silness and Loe plaque score index. 47 (39%) of the participants presented with mild plaque accumulation followed 42 (35%) by heavy plaque accumulation. 19 (16%) had moderate plaque accumulation whilst 12 (10%) had standard oral hygiene or no plaque accumulation.

Gingival health assessment of participants is presented in Figure 1. The presence of gingival bleeding, gingival recession, gingival hyperplasia, gingival reddening

Table 2. Special needs of study participants.

Description	freq	Percentage %
Cerebral palsy	34	28.1
Down syndrome	32	26.4
Autism	18	14.9
Asymptomatic IQ	16	13.2
Epilepsy	8	6.6
Cretinism	3	2.5
Microcephaly	3	2.5
Low IQ O/A birth asphyxia	3	2.5
Low IQ O/A meningitis	2	1.7
Adhd	1	0.8

Table 3. Dental caries experience per special need prevalence.

Description	Freq	Dental caries experience	p-value[1]
Cerebral palsy	34	7	0.14
Down syndrome	32	10	>0.9
Autism	18	4	0.4
Asymptomatic IQ	16	7	0.2
Epilepsy	8	3	0.7
Cretinism	3	3	0.027
Microcephaly	3	3	0.027
Low IQ O/A birth asphyxia	3	0	0.6
Low IQ O/A meningitis	2	0	>0.9
Adhd	1	0	>0.9
Total	121	37	

[1]Wilcoxon rank sum test; Pearson's Chi-squared test; Fisher's exact test.

Table 4. Periodontal health.

Description	Number	Percentage %
Halitosis	35	29
Missing	6	11
No missing teeth nor halitosis	80	66
Total	121	100

Table 5. Dental caries prevalence.

Plaque	0	1	2	3
Prevalence	12 (10%)	47 (39%)	19 (16%)	42 (35%)

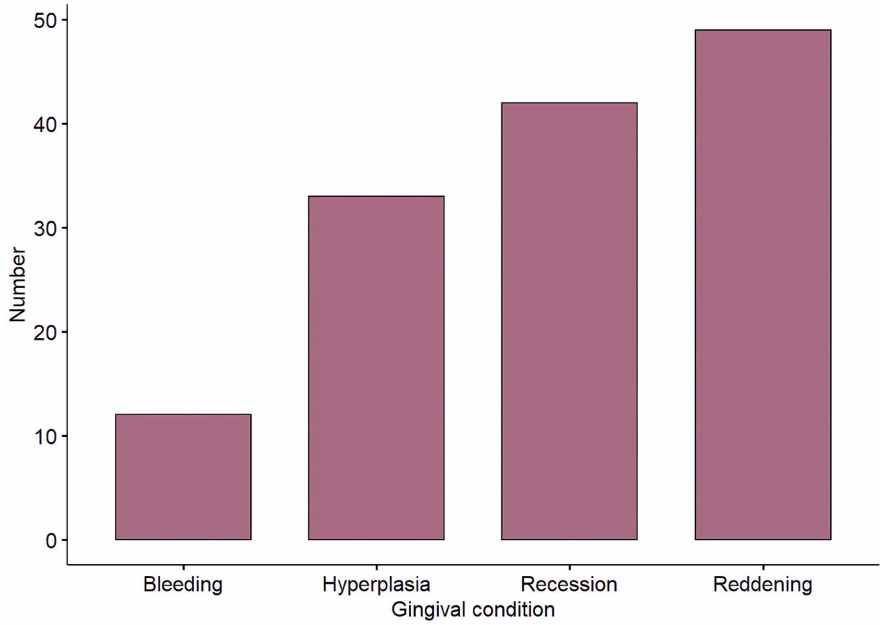

Figure 1. Gingival health assessment.

was put together and a score given according to Loe and Silness as good, moderate, poor, and very poor.

46 participants had reddening of gingiva, 40 gingival recession, 32 gingival hyperplasia and bleeding gingiva to touch in 12 persons in the population examined. It was observed the general population had poor gingival health.

Malocclusion

A total of 109 participants had malocclusion when assessed using Angle's classification and the remaining 12 either had their first permanent molars extracted, or they were unable to meet the criteria for assessment. Table 6 shows 100 of the participants presented with a Class I molar relation accounting for 92% of the 109 assessed, 2% were in Class II molar relation and 6% in Class III molar relation.

Figure 2 shows the types of malocclusions found. 30 of the participants had an open bite of varying degrees. 18 had a crossbites, 13 with increased overjet, 12 of the participants presented with crowding and 11 with anterior spacing. In addition, 8 participants had an increased overbite whilst 4 showed edge to edge bite.

Dental Injuries

Table 7 shows the distribution of dental injuries. 16 participants, equivalent to 13% of the sample population, had traumatic dental injuries. All 16 had traumatic injuries in the upper arch, with 1 having an injury in the lower arch as well. Traumatic dental injuries recorded included teeth avulsion (5) and teeth fracture (11). Discoloured teeth associated with trauma were found in 5 persons.

Other Dental Conditions

Some of the participants presented with other dental conditions. These are presented in Table 8 and included congenitally missing teeth, peg shaped teeth,

Figure 2. Maloclussion examined in study participants cross-matched with Angle's classification of malocclusion.

Table 6. Malocclusion.

Description	Number	Percentage %
Class I	100	92
Class II	2	2
Class III	7	6

Table 7. Traumatic injury.

Description	Number	Percentage %
Traumatic injury	16	13
Type of injury		
Fracture	11	69
Avulsion	5	31
Arch		
Upper	16	100
lower	1	1
Discoloration	5	45

Table 8. Other dental conditions.

Description	Number	Percentage %
Congenitally missing	9	16
Congenital anomalies	15	26
Peg shaped	11	42
Supernumerary	4	15
Mal-rotated teeth	8	14
Malposed teeth	15	26

Continued

Ulcer	10	18
Tooth wear	10	18
Retained deciduous teeth	10	18
One retained	5	50
More than one retained	5	50

supernumerary teeth, ulcers, malposed, mal-rotated teeth, ulcers, and retained teeth. The conditions occurred either in isolation or as a combination.

6. Discussion

6.1. The Burden of Dental Diseases/Oral Health Status

Improving oral health is a goal in the WHO's 2030 noncommunicable disease and universal health coverage agendas [33]. This study conducted in Kumasi, Ghana, on individuals with intellectual disabilities found a higher proportion in males (55%) compared to females (45%). This aligns with previous research indicating more impaired boys are born than disabled females due to differences in ascertainment rates [34]. Possible explanations include slower development of communication skills in males and their higher survival rates with disabilities. Cerebral palsy had the highest prevalence (28.1%) among the study population, followed by Down syndrome (26.4%) which is coincident with a study by Prabhu *et al.*, 2010 [34].

The poor oral hygiene seen in this population may be a result of their medical conditions, lack of knowledge and understanding on oral care practices, limitations such as poor dexterity, not forgetting neglect from the caretakers. Mental, behavioural, physical, and congenital anomalies, as well as side effects of medications, contribute to the poor oral health condition of children with special needs [35].

6.2. Dental Caries

The study found a prevalence of dental caries of 31% and a mean DMFT score of 2.82, indicating a moderate score according to WHO classification. These results support previous studies highlighting a high prevalence of dental caries among people with special needs in Africa [9] [36]. It is consistent with the global epidemiological research that indicates low- and middle-income countries have a higher prevalence of dental caries [25]. Participants with Down syndrome had the highest caries experience [13], followed closely by those with cerebral palsy which is consistent with a study by Gufran, 2019 in Saudi Arabia [37]. Various factors, including disabilities, medications, diet, poor oral hygiene, and limited access to dental care, contribute to caries experience in individuals with special needs; not forgetting neglect [13]. Previous studies have reported similarities in the caries experience in people with or without special needs [38]. Oral health usually deteriorates faster in special needs than the general population as they

grow older. There are fewer restorations, more missing teeth and more untreated dental caries found in children with special needs than in the general population [19] [26]. In Saudi Arabia, it has been estimated that 2.9% of the total population have an extreme form of disability with a higher prevalence of oral disease, such as dental caries and periodontal disease [13].

6.3. Periodontal Health

Periodontal diseases affect the periodontium, including the gingivae, alveolar bone, periodontal ligaments, and cementum [9]. Symptoms range from gum reddening and bleeding to gum recession, bone loss, tooth mobility, and tooth loss [18]. In the study, prevalence rates were 10% for bleeding gingiva, 35% for gingival recession, and 40% for gum reddening which indicates poor periodontal health. Insufficient plaque clearance was identified as the primary factor contributing to periodontal disease in individuals with intellectual disabilities [39]. In this study, similar report can be given as mechanical removal of plaque was a challenge with the participants as well as the caretakers, in monitoring and ensuring proper oral hygiene practices. Halitosis, which can also be an indicator for periodontal health was present in 29% of participants. Six individuals had missing teeth due to periodontal conditions, with one being completely edentulous in the maxilla. High plaque indices were noted, possibly due to poor oral hygiene practices, such as using fingers for oral hygiene practices or failure to practice good oral hygiene as they face challenges in maintaining oral hygiene due to their limitations [17]. Halitosis, unpleasant taste, and bleeding gums are characteristics of severe chronic periodontal disease [11] which was seen in about 29% and 10% of the study population. Individuals with Down syndrome for instance, require active oral hygiene maintenance due to their possible altered immunity and saliva and increased susceptibility to oral pathogens [13].

6.4. Malocclusion

The study found that 92% of the population had a class I molar relation, with open bite being the most common malocclusion and edge-to-edge bite being the least common. Two individuals had a class II molar relation without any other malocclusions, while 6% had a class III molar relation, often accompanied by crossbite, anterior spacing, and overjet. These malocclusions may be attributed to factors such as lip hypertonicity, tongue thrusting, and maxillary atresia [40]. Another study reported 20% with Angle's class II malocclusion and 46% with class III malocclusion [25]. Moreover, there was a higher need for orthodontic treatment in patients with Down syndrome (66% - 82%) due to Class III malocclusions.

6.5. Traumatic Injuries

The prevalence of dental traumatic injuries was 13% with tooth fractures being the most common injury, especially in the upper arch (69% of cases). Disco-

loured teeth were associated with 45% of fractured teeth. Avulsion occurred in 31% of cases. Anterior teeth were more affected, possibly due to increased overjet [26] [27]. Children with cerebral palsy are more likely to experience dental trauma [26].

6.6. Other Lesions

In addition to the objectives of the study, other examination findings in the study population revealed congenitally missing teeth in 16% of individuals and congenital anomalies in 26% of individuals, including peg-shaped laterals (42%) and supernumerary teeth (15%). Rotated and malposed teeth were observed in 14% and 26% of the population, respectively. Ulcers such as angular cheilitis, aphthous ulcers, and bite injuries occurred in 18% of the population. Tooth wear and retained deciduous teeth affected 18% of the population. These findings may be associated with malocclusion in individuals with special needs.

6.7. Treatment Needs

The study findings indicate that the participants have various treatment needs. The majority of the population requires treatment for dental caries, periodontal health, prosthodontic treatment, orthodontic treatment, and medical treatment for the identified ulcers. Preventive treatment should be prioritized due to the challenges associated with general treatment in this population. A significant portion (34%) had a plaque score of 3, indicating the need for scaling and polishing with or without scaling and root planning. Tooth fractures were observed in 11 individuals, and 24% had current carious lesions, with the highest recorded number being 13. The high observance of treatment needs is consistent with previous studies [40].

7. Conclusion

It can be concluded that the oral health status of individuals with special needs is relatively low or unsatisfactory, with very low interest in dental care, and high unmet needs. Mean DMFT in this study was moderate, with the highest score recorded in people with Down syndrome. Periodontal health was poor and other records of the oral tissues contribute to good oral health status. This study provides some information on the oral status of special needs individuals which can be useful in planning oral health programs for the special needs population in Ghana.

Recommendation

1) Efforts should be increased in oral health education and outreach for people with special needs and their caretakers, promoting the use of specially designed toothbrushes and fluoridated tubes of toothpaste. Surveys should educate institutional staff.

2) Oral health should be integrated into academic and social programs of spe-

cial needs schools. Special care dentistry should be included in dental school curricula, with a focus on training more dentists in this field.

3) Preventive and restorative-based intervention programs should be organized by the Ghana Health Service and dental professionals to handle the unmet needs of special needs people with intellectual disability to prevent poor oral status.

Limitations

This was a study based on convenience, which may not reflect the true population.

A smaller sample size obtained for the study than expected does not allow for generalizing the results obtained in the study as it is not representative of people with special needs *i.e.*, intellectual disability in Ghana.

Conflicts of Interest

The authors declare no conflict of interest.

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