Assessment of Gingival Health among Children in Jeddah, Saudi Arabia: A Cross-Sectional Study

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Abstract: Objective: This research aims to determine the Assessment of Gingival Health among Children in Jeddah, Saudi Arabia.

Methods: This research will employ a cross-sectional study design to assess the gingival health of children in Jeddah, Saudi Arabia. A cross-sectional approach allows for data collection from a representative population sample at a single point in time, providing a snapshot of gingival health status among children.

Results: The study included 250 participants. The most frequent gender among them was male (n= 144, 57.6%) and female (n= 106, 42.4%). The most frequent age among study participants was 9-12 years (n=71, 28.4%) followed by 13-16 years (n= 64, 25.6%), then 6-8 years (n=55, 22%), 3-5 years (n=34, 13.6%) and 2 years and less (n=26, 10.4%). The most frequent nationality among study participants was Saudi (n=212, 84.8%) and non-Saudi (n=38, 15.2%). Passive smoking among study participants, with most of them having smoked (n=154, 61.6%) and don't smoke (n=96, 38.4%). Medical history among study participants, with most of them saying yes (n=160, 64%) and no (n=90, 36%). Participants were asked if they were using medical. Most frequently, people don't use (n= 140, 56%) and use medical (n=110, 44%).

Conclusion: the study highlighted a significant prevalence of gingival health issues among children in Jeddah, Saudi Arabia. Factors such as poor oral hygiene practices, limited frequency of dental visits, and dental plaque and deposits were identified as contributing to gingival problems. The findings emphasize the need

for improved oral health education, regular dental check-ups, and preventive measures to reduce the incidence of gingival diseases in children. Early intervention and community-based awareness programs are recommended to promote better oral health habits among children and their caregivers.

1. Introduction

The high incidence rates and extraordinary societal effect of periodontal disorders make them of great public health concern. There has been new evidence linking periodontal disease to overall population health [1]. Plaque buildup on teeth has been linked to the development of gum disease [2]. Dental plaque biofilms often include several different types of organisms. When plaque builds up at the gum line, it triggers an inflammatory response that sometimes lasts for weeks or months [3, 4]. Gingivitis is an inflammation of the gums that causes redness, swelling, and bleeding upon probing but does not cause any loss of alveolar bone or other tooth support [5, 6]. If gingivitis is treated, it may be healed without leaving any lasting harm. Untreated gingivitis may develop into periodontitis, which can destroy alveolar bone and result in tooth loss. Effective oral hygiene to manage the dental plaque is recommended by dentists for good oral health based on epidemiological and experimental research [2, 7-8]. As a result, controlling gingivitis is essential in avoiding the progression to periodontal disease [9]. In addition, the release of inflammatory mediators into the circulation from gingival inflammation may have a detrimental effect on general health [10, 11].

Adults between the ages of 18 and 40 at a private college in Riyadh City had a 100% incidence of gingivitis [12], whereas 272 children between the ages of 5 and 12 had a 100% prevalence of gingivitis [13]. Gingivitis afflicted approximately 70% of children older than 7 years old in a separate research [14], with severity varying across age groups. An effect of lifestyle on gingival health status and the need to encourage a healthy lifestyle are highlighted by a 2016 cross-sectional study of Saudi males (n=685) aged 13-15, which found that the severity of gingivitis was not associated with tooth brushing but significantly increased in smokers and people who consumed a sugary diet [15]. The prevalence of periodontal disease is lower in young subjects than in adults, according to another research [16], and the incidence of the illness is higher in teenagers aged 12–17 compared to children aged 5–11.

Gingivitis has been linked to plaque management, which includes but is not limited to cleaning and flossing teeth and the tongue. Plaque may be effectively removed from teeth by using dental floss, as this has been well acknowledged [17]. The American Dental Association (ADA) reports that 80 percent of plaque deposits may be eliminated by flossing [18]. Oral health knowledge, attitudes, and practices are strongly correlated with socioeconomic level [19, 20], which is a well acknowledged fact. An increased incidence of gingivitis was found in a research that assessed data on self-reported oral hygiene measures. Possible explanations for these results include the sample population and the results of routine preventive dental treatment. Gingival health was shown to be affected by socioeconomic level, oral hygiene frequency, and toothbrush texture [21] in a randomly chosen group of Nigerians who reported brushing their teeth at least once daily. Better adult dental health may be achieved by the early detection and treatment of periodontal disorders in children and adolescents. Some systemic illnesses and ailments may be more likely to strike someone who has had an early onset of periodontal disease as a youngster [6, 22]. Benefits from preventing and treating most periodontal disorders last a lifetime. It is possible to identify high-risk patients, families, or groups and enroll them in targeted preventive or treatment programs [23]. Schools, social media, and oral health experts are all great places to spread the word about the need to introduce dental services [24-25].

2. METHODS

Study design

This research will employ a cross-sectional study design to assess the gingival health of children in Jeddah, Saudi Arabia. A cross-sectional approach allows for data collection at a single point in time from a representative population sample, providing a snapshot of gingival health status among children.

Study approach

The study will be conducted in various settings across Jeddah, including schools, dental clinics, and community centers, to ensure a diverse representation of the target population.

Study population

The population of interest comprises children aged up to 16 years residing in Jeddah, Saudi Arabia.

Study sample

A stratified random sampling technique will be employed to select a representative sample from different age groups and geographical locations within Jeddah. The sample size will be determined based on statistical power calculations and will aim to achieve a sufficient level of precision in estimating the prevalence of gingival health issues.

Study tool

For the current study, a questionnaire was adopted for data collection, which was also categorized as a study tool.

Data collection

Data will be collected through clinical examinations and structured interviews. Trained dental professionals will conduct clinical assessments to evaluate gingival health, while structured interviews will gather information on oral hygiene practices, dietary habits, and socio-demographic variables.

Data analysis

Descriptive statistics will be used to summarize the prevalence and severity of gingival health issues among the study population. Inferential statistics, such as chi-square tests and logistic regression, will be employed to analyze associations between potential risk factors and gingival health. Statistical software (e.g., SPSS) will be used for data analysis.

Ethical considerations

Ethical approval will be obtained from the Institutional Review Board (IRB) or Ethics Committee of the research institution. Informed consent will be sought from parents or legal guardians of the participating children, and assent will be obtained from older children who can comprehend the study's purpose and procedures. Privacy and confidentiality of participants' data will be strictly maintained, and all data will be anonymized during analysis and reporting. Researchers will adhere to ethical guidelines and principles throughout the study.

3. RESULTS

The study included 250 participants. The most frequent gender among them was male (n= 144, 57.6%) and female (n= 106, 42.4%). Figure 1 shows the gender distribution among study participants. The most frequent age among study participants was 9-12 years (n=71, 28.4%) followed by 13-16 years (n= 64, 25.6%), then 6-8 years (n=55, 22%), 3-5 years (n=34, 13.6%) and 2 years and less (n=26, 10.4%). Figure 2 shows the age distribution among study participants. The most frequent nationality among study participants was Saudi (n=212, 84.8%) and non-Saudi (n=38, 15.2%). Figure 3 shows the distribution of nationality among study participants.

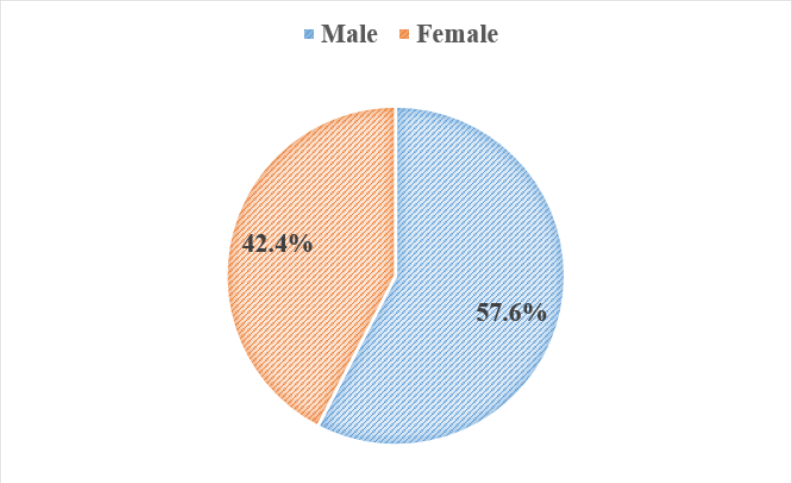

Figure 1: Gender distribution among study participants

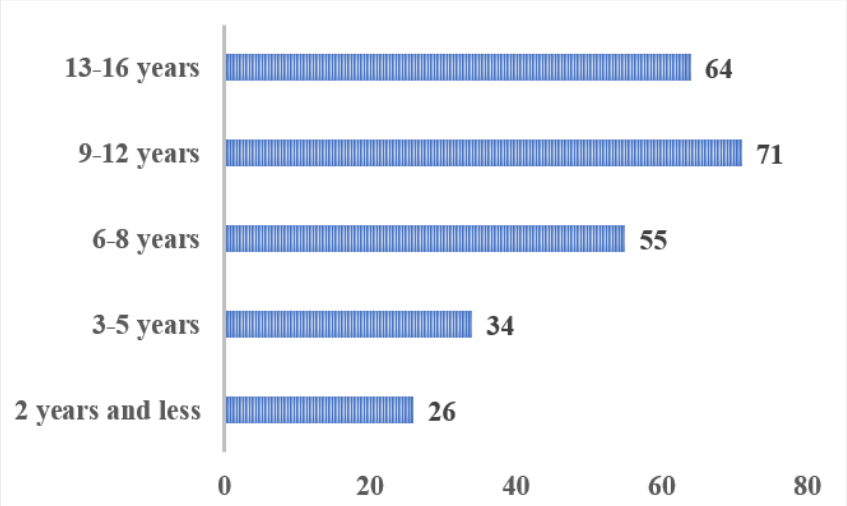

Figure 2: Age distribution among study participants

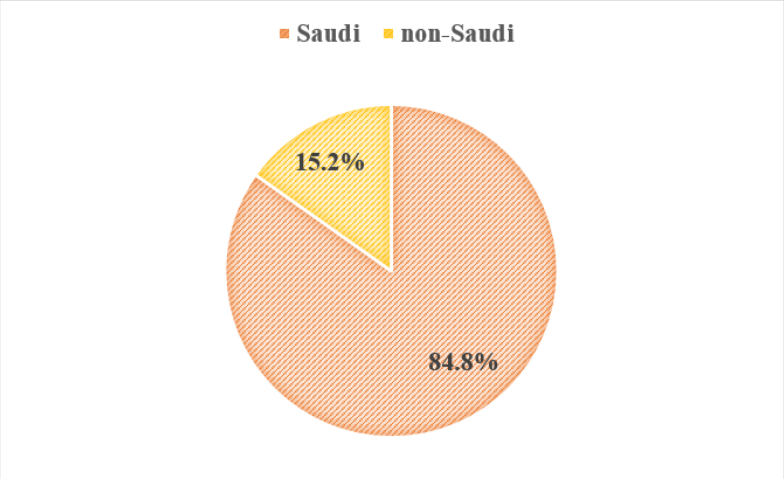

Figure 3: Nationality distribution among study participants

Passive smoking among study participants, with most of them having smoked (n=154, 61.6%) and don't smoke (n=96, 38.4%).

Medical history among study participants, with most of them saying yes (n=160, 64%) and no (n=90, 36%). Medical history is presented in Figure 4.

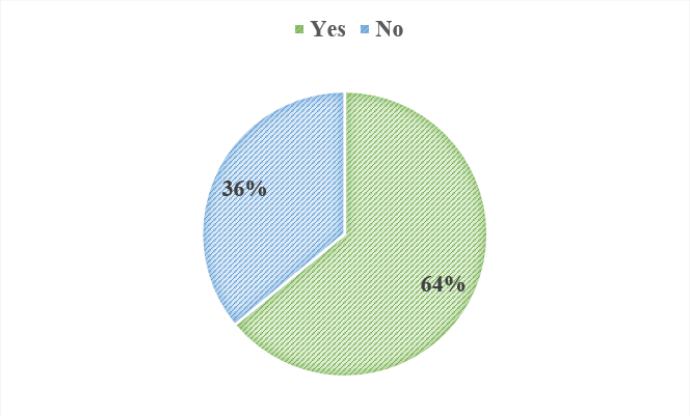

Figure 4: Medical history distribution among study participants

Participants were asked if they were using medical. Most frequently, people don't use (n= 140, 56%) and use medical (n=110, 44%).

Participants were asked to assess gingival health among Children. Their responses and results are presented in Table 1.

Table 1: Assessment of Gingival Health among Children

item	Yes	No
Do you visit a dentist regularly?	102 (40.8%)	148 (59.2%)
Do you brush your teeth?	156 (62.4%)	94 (37.6%)
Do you visit a dentist regularly?	80 (32%)	170 (68%)
Do you brush your teeth?	56 (22.4%)	194 (77.6%)
Do you floss your teeth?	80 (32%)	170 (68%)
Do you brush your tongue?	56 (22.4%)	194 (77.6%)
Previous dental treatment	206 (82.4%)	44 (17.6%)
Previous permanent teeth extracted	202 (80.8%)	48 (19.2%)
Does the child have Plaque and Deposit around his/her teeth?	164 (65.6%)	86 (34.4%)
Does the gum of child bleed easily?	196 (78.4%)	54 (21.6%)
There is abnormal tooth mobility of child's teeth.	163 (65.2%)	87 (34.8%)
Dose the child suffer from Halitosis?	176 (70.4%)	74 (29.6%)

Participants spent brushing frequency. Figure 5 shows participants' brushing frequency per day.

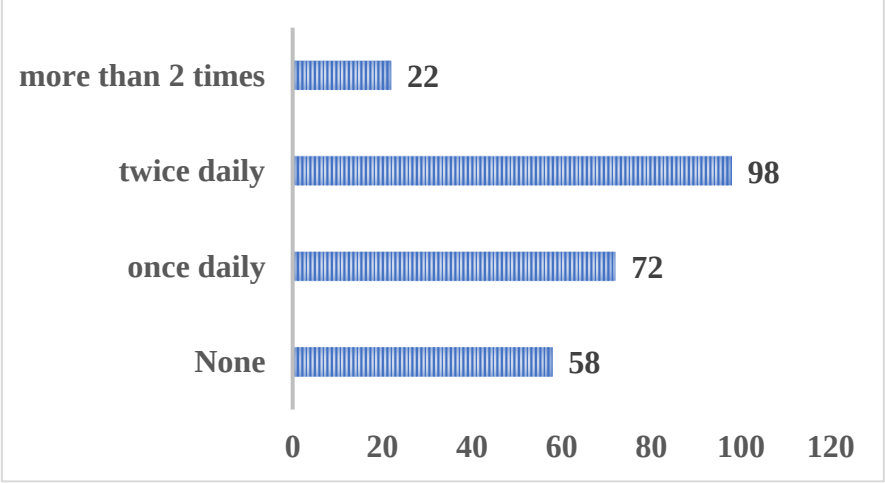

Figure 5: Participants' brushing frequency per day

4. DISCUSSION

Children have a high rate of dental caries now, but there is evidence to suggest that this was not always the case among Indigenous populations [26-29]. Dental caries were far less common in ancient Inuit populations than they are now [28, 30], suggesting that indigenous peoples have passed down important information about how to maintain good oral health from generation to generation. Colonialism has contributed to the current state of oral health disparities among Indigenous peoples [31, 32]. Animal sinew was often used as dental floss in the past [33], and birch bark was used as an antimicrobial mouthwash. Dental caries expanded with the availability of meals high in fermentable carbohydrates [26]. A sharp increase in dental caries cases has been seen in Canadian Indigenous communities [34, 35], and it has been linked to the introduction of new high-sugar cuisine and a lack of access to dental care.

Evidence linking oral and systemic disease(s) is growing, and this has implications for both general health and quality of life [36]. When a kid is between the ages of 0 and 71 months old, they are considered to have early childhood caries (ECC) if they have any decaying or filled tooth surfaces or are missing one or more teeth as a result of dental caries [37]. When it comes to day surgery procedures to treat dental caries in children aged 1-5 years old, Saskatchewan ranks third highest in Canada [38-39], behind only Nunavut and the Northwest Territories. The numbers likely understate the severity of the issue since it does not account for children who get dental care in clinics or offices. The effects of ECC on children's physical, mental, and social health may be profound [40]. Low birth weight [41], premature birth [42], and iron deficiency [43] are some of the other health issues proven to be associated with ECC. Among Canadian children ages 6 to 11, 57% have ECC infections, and among all children, 24% have caries damage to their permanent teeth [44]. Children with ECC may have trouble eating, talking, and sleeping because to the accompanying discomfort [27]. Caries affects the self-esteem and academic achievement of children and adolescents [27, 44]. The yearly cost of treating patients with ECC is $21.2 million [39], which includes the expense of day surgery for those who need it. Although early detection of ECC allows for community-based treatment, children with extensive decay often need surgical intervention while under general anesthesia, which poses additional risks to their health [39]. Dietary decisions, the degree of exposure to microorganisms, and other socioeconomic determinants of health have all been linked to ECC, which is why it is considered a multifactorial illness [39].

Inequalities in access to oral health care among underprivileged communities in Canada were studied in a report by the Canadian Academy of Health Sciences (CAHS) [45]. Statistics from the Canadian Health Measures Survey (CHMS) [44] show that people from disadvantaged backgrounds are less likely to have dental insurance and are more likely to avoid the dentist because of the expense, even in cases of dental emergency. More people will experience pain, tooth loss, and gum disease because of untreated dental decay. Members of the afflicted communities may also be less inclined to consume nutritious meals like fruits and vegetables because of the discomfort associated with doing so. The Report identifies five dimensions proposed by Pechansky and Thomas [46] as obstacles to utilizing oral health care services, including: affordability (do the provider's charges relate to the client's ability to pay for services?), availability (does the provider have the requisite resources, such as personnel and technology, to meet the needs of the client?), accessibility (how easy is it for the client to physically reach the provider's location?), and accommodation. [46]. Overall, reducing inequities is seen as essential to enhancing Indigenous populations' oral health. When used within a culturally sensitive framework that takes into account issues unique to Indigenous groups, such as the need of preserving traditions, this strategy may be more successful [47].

Under the Canada Health Act, the federal government is responsible for providing health transfers to the provinces and territories. Since oral health is not generally covered by the Canada Health Act, there is substantial heterogeneity in accessibility, continuity of programs,

and transfer of benefits among provinces and territories [45]. First Nations communities have access to a wide range of services because to the prevalence of a diverse array of programs, financing arrangements, and oral health care providers. Despite budget allocations, not all members of a community have equal access to offered services. The prevalence of tooth decay is two to three times greater in indigenous groups than in the general population [48]. The original Canadian Oral Health Strategy (COHS) (2005-2010) lacked in baseline data about the prevalence of ECC, making it difficult to create programs and track progress [48]. Since then, only one First Nations Oral Health Survey [49] and one Inuit Oral Health Survey [50] have been completed and published. To help expectant mothers, young children, and parents of First Nations and Inuit descent avoid dental caries [51], the Children's Oral Health Initiative (COHI) was established. When it comes to providing oral health education and services, COHI makes use of community-based aids [51]. Current evidence suggests that the COHI has enhanced children's access to preventative oral health care, but has not reduced the incidence of dental caries [52]. However, the process that emerged from the groundwork planning prioritized the needs of underserved communities and groups, such as Indigenous peoples and low-income families.

5. CONCLUSION

The study highlighted a significant prevalence of gingival health issues among children in Jeddah, Saudi Arabia. Factors such as poor oral hygiene practices, limited frequency of dental visits, and dental plaque and deposits were identified as contributing to gingival problems. The findings emphasize the need for improved oral health education, regular dental check-ups, and preventive measures to reduce the incidence of gingival diseases in children. Early intervention and community-based awareness programs are recommended to promote better oral health habits among children and their caregivers.

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