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Assessment of Oral Health Status of Children with Sickle Cell Disease in Raipur City, Chhattisgarh

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Abstract-
Background- *Sickle cell disease (SCD) is the most prevalent monogenic hereditary pathology associated with the presence of hemoglobin SS in the world. It can affect individuals, leading to changes in the face and body, causing a deficiency in dental and bone tissue formation that can ultimately result in a higher level of predisposition to developing dental caries. Dentists play an important role in preventing complications and improving the quality of life of patients with sickle cell disease because these patients are more susceptible to infections and periodontal disease, so the aim of the study was to assess oral health status of children with sickle cell disease.*
Materials and Methods-*This cross-sectional study was conducted in Sickle cell institute Raipur, Chhattisgarh and subjects in comparison group were selected from school. A total of 200 individuals, aged 3-14 years were included in the study. The patients were divided into two groups, I (n=100) in sickle cell group and II (n=100) in the control group. Oral cavity of selected subjects was examined clinically to determine the dmft (number of decayed primary teeth, teeth extracted and teeth that were filled), DMFT (number of decayed permanent teeth, missing teeth and teeth that were filled) index, Plaque index (PII) and Gingival index (GI) respectively.*
Results: *Group I (sickle cell anemia) was compared with group II (control group), the mean± standard deviation for decayed missing filled tooth was (DMFT=5.1900±1.41203, 2.7800±2.69897), plaque index (PI=2.2930±.49528, .7155±.41000) and gingival index (GI=2.279±0.52634, .6499±.32576). Results were found to be highly significant (P<0.001) when comparison was made between two groups.*
Conclusion- *Children with sickle cell disease has deficient oral health when compared with comparison group.*
Key words*: Sickle cell anemia, hemoglobin SS, DMFT index, Plaque index, Gingival index*

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I. Introduction

Sickle cell anemia is a genetic disorder characterized by a mutant type of hemoglobin, called hemoglobin S (HbS), that causes the sickling of red blood cells.[1] Sickle cell anemia, although treatable, is a chronic incurable disease involving medical, dental, genetic, and psychosocial factors.[2,3] Dentists play an important role in preventing complications and improving the quality of life of patients with sickle cell disease because these patients are more susceptible to infections and periodontal disease.[4] These patients are also at a higher risk of developing dental caries because of the high prevalence of dental opacities. The frequent and continuous use of medication containing sucrose, and the high frequency of complications and hospitalization brought about by the absence of proper oral hygiene.[5] Therefore, aim of the study was to assess oral health status of children with sickle cell disease.

II. Materials and Methods

This cross-sectional study was conducted in Sickle cell institute Raipur, Chhattisgarh and subjects in comparison group were selected from school. This study was approved by the Ethical Research Committee. A total of 200 individuals, aged 3-14 years were included in the study

Study design- Cross-sectional study

Study location- The study was conducted in Sickle cell institute Raipur, Chhattisgarh and subjects in comparison group were selected from school.

Study duration: November 2019 to January 2020

Subjects: The patients were divided into two groups

Group I (n=100) in sickle cell group and
Group II (n=100) in the control group.

Inclusion criteria-

1. Children aged 3-14 years
2. Subjects which allowed intraoral examinations.
3. Consent of parent and guardians to participate in the study.

Exclusion criteria-

1. Other systemic disease
2. Psychiatric or neurological disorders
3. Other factors
4. Whose general health status did not allow them to undergo the examination.

Procedure methodology

Oral cavity of selected subjects was examined clinically to determine the dmft (number of decayed primary teeth, teeth extracted and teeth that were filled), DMFT (number of decayed permanent teeth, missing teeth and teeth that were filled) index, Plaque index (PII) and Gingival index (GI) respectively.

Statistical analysis

Data was analysed using SPSS version 20.2(IBM Corp) and t test was used to compare DMFT, plaque index, and gingival index between the groups.

III. Results

Table no. 1- Demographic details of the study population

Group	Gender		Total percentage
	Male %	Female %	
Sickle cell anemia	62	38	100
Control group	68	32	100
Total	100	100	100

Table no 1. Demonstrates demographic details of the study population. A total of 200 individuals, 100 were male and 100 were female participants. In Group I sickle cell anemia group 62% were male and 38% were females and in Group II Control group 68% were male and 32% of population were females.

Table no. 2 -Inter group comparison of plaque, gingival and DMFT index

	Group	Mean	Standard deviation	T value	P value
Plaque index	SC	2.2930	.49528	24.535	0.00
	CONTROL	.7155	.41000		
Gingival index	SC	2.2790	.52634	26.319	0.00
	CONTROL	.6499	.32576		
DMFT	SC	5.1900	1.41203	7.912	0.00
	CONTROL	2.7800	2.69897		

In the present study, when children of group I (sickle cell anemia) was compared with group II (control group), the mean± standard deviation for decayed missing filled tooth was (DMFT=5.1900±1.41203, 2.7800±2.69897), plaque index (PI=2.2930±.49528, .7155±.41000) and gingival index (GI=2.279±0.52634, .6499±.32576). Results were found to be highly significant (P<0.001) when comparison was made between above group. (Table no. 2)

IV. Discussion

In this study, children with sickle cell disease reported high dmft than the control group, and the result was statistically significant, Which in lines with the studies conducted by Luna et al. (2012)[1] among the sickle cell disease group, where high DMFT reported 6.59 and 1.50 respectively and the result was statistically significant. This finding may be explained by prolonged use of sweetened drugs and dental opacities, as well as the patients were more anxious with their main life threatening problem neglect basic preventive dental care. According to another correlating study conducted by Haley M et al. (2015)[6] sickle cell disease children had high prevalence of dental caries than the healthy children. In contrast, De Matos et al. (2014)[7] reported low dmft among sickle cell disease group than the control group (2.13), as well no significant difference was found. Low dmft (0.21) was reported by Fukuda JT et al. (2005)[8] in USA among sickle cell disease population. This explained by the fact that, both studies conducted in sickle cell disease children under long term penicillin prophylactic therapy. A study conducted Guzeldemir E (2011)[9] had found plaque and gingival indices were

significantly higher in sickle cell anemic patients than in healthy individuals (Periodontal Disease and Gingival Index (P=0.02; r=0.299), Periodontal Disease and Plaque Index (P=0.01; r=0.343).

These results are similar to our study, when comparison was made between sickle cell anemic patients and control group as follows, plaque index (2.2930±.49528) and gingival index (2.2790±.52634).

V. Conclusion

Children with sickle cell disease has deficient oral health when compared with comparison group. Sickle cell disease children had high prevalence of dental caries and poor gingival status than the healthy children. Establishment of frequent dental examination schedule for sickle cell disease children, including preventive dental care and promoting oral hygiene practices with toothbrushes, toothpaste, and mouthwash are recommended.

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