A COMPARATIVE EVALUATION OF DENTAL CARIES STATUS AMONG VISUALLY IMPAIRED AND NORMAL CHILDREN OF MALDA, WEST BENGAL EVALUATED WITH CARIES ASSESSMENT SPECTRUM AND TREATMENT-A NEW CARIES ASSESSMENT SYSTEM

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ABSTRACT

Context: Dental caries is one of the major diseases affecting the structure of tooth. It may affect both normal and visually impaired children. Aims: This study was aimed to evaluate and compare the prevalence of dental caries in visually impaired and normal children of Malda, West Bengal utilizing Caries Assessment Spectrum and Treatment (CAST). Settings and design: In a cross-sectional case control stu dy of dental caries status of 6-14 years old children were assessed. Subjects and Methods: The case group consisted of visually impaired children in the studied area in 2012 -2013.The control group consisted of normal 6-14 years old children who were also resident of the studied area. A sample of 453 visually impaired and 482 normal children was examined. Statistical analysis used: Statistical analysis was carried out using Z test. Results: Statistically significant difference found in studied (visually impaired) and control group (normal children) Conclusions: visually impaired children are considered inferior than normal children when studied in relation to dental caries status.

Key words: prevalence, CAST, Dental caries, visually impaired

INTRODUCTION

Visual impairment relates to a person's eyesight which cannot be corrected to normal vision.[1] According to WHO visual impairment is defined as having a 'visual acuity of less than 3/60m or corresponding visual person could see 60 meters. Oral cavity expresses an important role in maintaining phonetics, mastication, aesthetics, expression and communication of an individual.[2] Dental caries in modern days recognized as a completely reversible and preventable disease of dental hard tissues if it is diagnosed at an early noncavitated stage.[3] The innovation of "Caries Assessment Spectrum and Treatment" (CAST)[4] was done by incorporating positive aspects of ICDAS,[5] PUFA[6] and the DMF index by researchers of University of Brazil and Netherlands. Dental caries is a disease of dental hard tissue which affects different people to varying degrees and of various ages. Dental caries may affect visually impaired children also.

MATERIAL & METHODS

A descriptive, analytic, cross sectional study approved by the Ethical Committee of Guru Nanak Institute of Dental Science and Research was carried

out. Dental caries status of 6-14 years old children were evaluated. The case group was consisted of visually impaired children of the studied area and was selected by screening through exclusion criteria. The control group comprised of normal 6-14 years old children. Case and control studied samples were matched for the year of birth, area of residence, and socio-economic status. Students learning in the various institutions of Malda were included in this study. Children with mental retardation, physically handicapped, cerebral palsy and medically compromised children were excluded from the present study. The study was conducted after informed consent was obtained from the concerned authorities and guardians of children. All the children were examined for dental caries using sterile mouth mirror and probe under adequate illumination. All subjects were examined in the supine position. A well structured and validated history sheet was prepared for proper documentation of the study. Prior to examination each tooth was wiped with sterile cotton roll to get a dry surface for proper evaluation. Statistical analysis was carried out using Z test.

RESULTS

A total of 453 visually impaired children and 482 Normal children were studied. Among 453 visually impaired children, 262 (57.83%) were male and 191 (42.16%) were female. Among normal children, 251 (52.07%) were male and 231 (47.92%) were female. (Table 1)

Among visually impaired children 53.20% were having dental caries and 46.79% were caries free. But in normal children group 24.06% were affected by dental caries and 75.93% were found caries free. Regarding caries found among visually impaired and normal children group the Z-Score is 9.1641. The p-

Table 1. Sex wise distribution of visually impaired children and Normal children

Type of Children	Male	Female	Total
Visually impaired Children	262 (57.83%)	191 (42.16%)	453 (100%)
Normal children	251 (52.07%)	231 (47.92%)	482 (100%)
Total	513 (54.86%)	422 (45.13%)	935 (100%)

value is 0. The result is significant at $p < 0.05$. (Table 2)

Regarding sound tooth structure found between visually impaired and normal children group the Z-Score is -9.1641. The p-value is 0. The result is significant at $p < 0.05$. Regarding sealed tooth structure found between visually impaired and normal children group the Z-Score is -2.9023. The p-value is 0.00374. The result is significant at $p < 0.05$. Regarding restored tooth structure found between visually impaired and normal children group the Z-Score is -2.7671. The p-value is 0.0056. The result is significant at $p < 0.05$. Regarding distinct visual change in enamel found between visually impaired and normal children group the Z-Score is 3.0507. The p-value is 0.00228. The result is significant at $p < 0.05$. Regarding internal caries-related discoloration in dentine found between visually impaired and normal children group the Z-Score is 2.8465. The p-value is 0.00438. The result is significant at $p < 0.05$. Regarding distinct cavitation into dentine found between visually impaired and normal children the Z-Score is 5.362. The p-value is 0. The result is significant at $p < 0.05$. Regarding involvement of pulp chamber found between visually impaired and

Table 2. Caries Status of visually impaired Children and Normal children

Caries found	Visually Impaired Children						Normal children					
	Male	%	Fe-male	%	Total	%	Male	%	Fe-male	%	Total	%
Found	137	30.24	104	22.95	241	53.20	67	13.90	49	10.16	116	24.06
Not Found	125	27.59	87	19.20	212	46.79	184	38.17	182	37.75	366	75.93

Table 3: Prevalence of Total Spectrum of Dental Caries of Visually Impaired Children

Codes	Area Involved	Descriptive features	
		No.	%
0	Sound	212	46.79
1	Sealed	2	0.44
2	Restored	6	1.32
3	Distinct visual change in enamel	49	10.81
4	Internal caries-related discoloration in dentine	27	5.96
5	Distinct cavitation into dentine	42	9.27
6	Involvement of pulp chamber	31	6.84
7	Abscess / Fistula	33	7.28
8	Lost (due to caries)	51	11.25
9	Does not match with any of the other categories	0	0
A	Absent	0	0

Table 4: Prevalence of Total Spectrum of Dental Caries of Normal Children

Codes	Area Involved	Descriptive features	
		No.	%
0	Sound	366	75.93
1	Sealed	14	2.90
2	Restored	21	4.35
3	Distinct visual change in enamel	26	5.39
4	Internal caries-related discoloration in dentine	11	2.28
5	Distinct cavitation into dentine	7	1.45
6	Involvement of pulp chamber	11	2.28
7	Abscess / Fistula	6	1.03
8	Lost (due to caries)	20	4.35
9	Does not match with any of the other categories	0	0
A	Absent	0	0

normal children the Z-Score is 3.3651. The p-value is 0.00076. The result is significant at $p < 0.05$. Regarding abscess / fistula found between visually impaired and normal children the Z-Score is 4.6166. The p-value is 0. The result is significant at $p < 0.05$. Regarding tooth loss due to caries found between visually impaired and normal children the Z-Score is 4.101. The p-value is 0. The result is significant at $p < 0.05$. (Table 3 and 4)

DISCUSSION

Vision is one of the most essential senses for interpreting the nature's beauty, and when the vision is hampered in early ages, it can have detrimental effects on child's emotional and physical development. It can hamper learning ability of children also. Dental caries is a complex disease affecting tooth structure mainly caused by imbalance between demineralization and remineralization process around the tooth surface. Till date, no study was found on dental caries of visually impaired children using a new caries detection tool- Caries Assessment Spectrum and Treatment. This was probably the first study on CAST, which demonstrates caries prevalence in visually im paired children of Malda, West Bengal. In the present study, 46.79% and 75.93% cases of sound teeth were found in visually impaired and normal children respectively and the result is statistically significant. (Z-score 9.1641). 53.20% of

caries effected visually impaired children found in the present study instead of 24.06% in normal children and \the result is also statistically significant. The reasons for this observation may be the parent's of visually impaired children are less serious and conscious about their baby and take less care and precaution, and practices poor oral health maintenance regularly. Statistically significant results also found in all the other categories. No previous study was found involving visually impaired children of Malda in this field of dentistry. So no comparison was possible with the previous study.

CONCLUSION

In this study visually impaired children expressing dissimilar kind of dental caries pattern than normal children. Visually impaired children are considered inferior than normal children when studied in relation to dental caries status. This study invites further scope for cross sectional and longitudinal study for the upcoming researcher. Hopefully this kind of study will bring awareness to numerous parents of visually impaired children in the world.

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