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A COMPARATIVE EVALUATION OF CARIES PREVALENCE AMONG ORPHAN AND NORMAL CHILDREN OF MALDA, WEST BENGAL EVALUATED WITH CARIES ASSESSMENT SPECTRUM AND TREATMENT-A RECENT CARIES ASSESSMENT SYSTEM

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ABSTRACT

Context: Dental caries is one of the major modern day diseases of dental hard tissue. It may affect both normal and orphan children. Aims: This study was aimed to evaluate and compare the prevalence of dental caries in orphan and normal children of Malda, West Bengal utilizing CAST- Caries Assessment Spectrum and Treatment. Settings and Design: In a cross-sectional case control study of dental caries status of 4-12 years old children were assessed. Methods and Material: The case group consisted of orphan children in the studied area in 2012 -2013.The control group consisted of normal 4-12 years old children who were also resident of the studied area. A sample of 284 orphan and 298 normal children was examined. Statistical analysis used: Statistical analysis was carried out utilizing Z test. **Results:** Statistically significant difference found in studied (orphan) 34.15% and control group (normal children) 17.44%. Z-Score -4.6158. The result is significant at p <0.05.

Conclusions: Orphan children are considered inferior than normal children when studied in relation to dental caries status.

KEYWORDS: CAST, dental caries, orphan impaired, prevalence.

INTRODUCTION

In India the population of orphans is nearly about 2 million.[1] A child under 18 years who has lost his father, mother or both parents is considered as orphan. Therefore they are considered socially marginalized and backward population.[2] Dental caries in recent years recognized as almost reversible and preventable disease of dental hard tissue structures provided diagnosed at an early noncavitated stage.[3] The application of "Caries Assessment Spectrum and Treatment" (CAST)[4] was designed by implementing positive aspects of ICDAS,[5] PUFA[6] and the DMF index by renowned researchers of the University of Brazil and Netherlands. Dental caries may affect different people to different degrees and of different ages. So dental caries may affect orphan children also.

SUBJECTS AND METHODS

An analytic, cross sectional, descriptive study approved by the Ethical Committee of Guru Nanak Institute of Dental Science and Research was carried out in this study. Dental caries status of 4-12 years old children were evaluated. The case group was consisted of orphan children of the studied area and was selected by screening through exclusion criteria. The control group comprised of normal 4-12 years old children. Case and control studied samples were matched for the year of birth, area of residence, and physical status**.** Students learning in the various institutions of Malda were included in this study. Children who are physically handicapped, having cerebral palsy, medically compromised and mentally retarded children were excluded from the present study. The study was conducted after informed consent was obtained from the concerned authorities and or guardians of children. All the children were examined for dental caries using sterile mouth mirror and probe under proper and adequate illumination. All studied subjects were examined in the supine position for best comfort. A well structured and validated history sheet was also prepared for proper documentation of the present study. Prior to examination each tooth was thoroughly wiped with sterile cotton roll to get a dry surface for proper evaluation. Statistical analysis was then carried out using Z test analysis.

RESULTS

A total of 284 orphan children and 298 Normal children were studied. Among 284 orphan children, 157 (55.28%) were male and 127 (44.71%) were female. Among normal children, 164 (55.03%) were male and 134 (44.96%) were female. (Table 1). Among orphan children 65.84% were caries free. But in normal children group 82.55% were found caries free. Regarding caries free individuals among orphan and normal children group the Z-Score is -4.6158. The p-value is 0. The result is significant at p <0.05. Regarding caries affected individual's also the Z-Score is 4.6158. The p-value is 0. The result is significant at p <0.05. (Table 2) Regarding sealed tooth structure found between orphan and normal children the Z-Score is -2.4375. The p-value is 0.01468. The result is significant at p <0.05. Regarding restored tooth structure found between orphan and normal children group the Z-Score is -3.5927. The p-value is 0.00034. The result is significant at p <0.05. Regarding distinct visual change in enamel found between orphan and normal children group the Z-Score is 2.256. The p-value is 0.02382. The result is significant at p <0.05. Regarding internal caries-related discoloration in dentine found between orphan and normal children group the Z-Score is 3.085. The p-value is 0.002. The result is significant at p <0.05. Regarding distinct cavitation into dentine found between orphan and normal children the Z-Score is 2.8409. The p-value is 0.00452. The result is significant at p <0.05. Regarding involvement of pulp chamber found between orphan and normal children the Z-Score is 2.256. The p-value is 0.02382. The result is significant at p <0.05. Regarding abscess / fistula found between orphan and normal children the Z-Score is 3.7383. The p-value is 0.00018. The result is significant at p <0.05. Regarding tooth loss due to caries found between orphan and normal children the Z-Score is 2.0197. The p-value is 0.04338. The result is significant at p <0.05. (Table 3 and 4).

Table 1 : Sex wise distribution of orphan children and Normal children.

Type of Children	Male	Female	Total
Orphan Children	157 (55.28%)	127 (44.71%)	284 (100%)
Normal children	164 (55.03%)	134 (44.96%)	298 (100%)
Total	321 (55.15%)	261 (44.84%)	582 (100%)

Table 2 : Caries Status of orphan Children and Normal children

Caries found	Orphan Children						Normal children					
	Male	%	Female	%	Total	%	Male	%	Female	%	Total	%
Found	52	18.30	45	15.84	97	34.15	31	10.40	21	7.04	52	17.44
Not Found	105	36.97	82	28.87	187	65.84	133	44.63	113	37.91	246	82.55

Table 3 : Prevalence of Total Spectrum of Dental Caries of Orphan Children.

Codes	Area Involved	Descriptive features	
		No.	%
0	Sound	187	65.84
1	Sealed	2	0.70
2	Restored	1	0.35
3	Distinct visual change in enamel	11	3.87
4	Internal caries-related discoloration in dentine	21	7.39
5	Distinct cavitation into dentine	16	5.63
6	Involvement of pulp chamber	11	3.87
7	Abscess / Fistula	22	7.74
8	Lost (due to caries)	13	4.57
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	246	82.55
1	Sealed	11	3.69
2	Restored	16	5.36
3	Distinct visual change in enamel	3	1.01
4	Internal caries-related discoloration in dentine	6	2.01
5	Distinct cavitation into dentine	4	1.34
6	Involvement of pulp chamber	3	1.006
7	Abscess / Fistula	4	1.34
8	Lost (due to caries)	5	1.67
9	Does not match with any of the other categories	0	0
A	Absent	0	0

DISCUSSION

The orphans are socially and economically deprived because they have lost their parents. Orphan children rarely get an opportunity to seek dental care.[7] Dental caries is a multifactorial complex disease affecting tooth structure mainly caused by microorganisms and associated factors. Till date, no study was found on dental caries of orphan 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 orphan children of Malda, West Bengal. In the present study, 65.84% and 82.55% cases of sound teeth were found in orphan and normal children respectively and the result is statistically significant. 34.15% of caries effected orphan children found in the present study instead of 17.44% in normal children and the result is also statistically significant. The percentage of caries affection is nearly doubled in orphan children. The reasons for this observation may be the orphan children are socially and economically deprived and practices poor oral health maintenance regularly. Statistically significant results also found in all other categories. These results reflect more attention is needed to improve the oral health status of orphan children. No previous study was found involving orphan children of Malda in this field of dentistry. So no comparison was possible with the previous study.

CONCLUSION

In this study orphan children expressing dissimilar kind of dental caries pattern than normal children. Orphan 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 scholar and researcher. More sincere attestation and regular checkup with socioeconomic upliftment can improve their condition.

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