PREVALENCE OF DENTAL CARIES AND TREATMENT NEEDS AMONG PRIMARY SCHOOL GOING CHILDREN IN NAGROTA BAGWAN BLOCK OF KANGRA, HIMACHAL PRADESH.

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HOW TO CITE THIS ARTICLE:

Pradeep Bansal, Anupriya Sharma, Ashoo Grover, Piyush Sharma, Richa Sharma. "Prevalence of dental caries and treatment needs among primary school going children in Nagrota Bagwan block of Kangra, Himachal Pradesh". Journal of Evolution of Medical and Dental Sciences 2013; Vol. 2, Issue 52, December 30; Page: 10177-10182

ABSTRACT:BACKGROUND: Oral diseases such as dental caries and gingival diseases affect about 80% of the school students worldwide. The study was taken up with the aim to evaluate the prevalence of dental caries and treatment need in the School going children of Nagrota Bagwan Block of Kangra District, Himachal Pradesh. **METHODOLOGY:** A total number of 3069 school children studying in ninety six government primary schools of study area were enrolled in the study. The data was collected to find out dental caries and treatment need using dentition status and treatment need index (WHO diagnostic criteria, 1997). Data analysis was done using t- test for continuous variables and Chi-square test for categorical data. **RESULTS:** The overall caries prevalence of subjects was 58.4% with high caries prevalence in females as compared to males and in 9-12 years age group as compared to 5-8 years age group. The mean dmft/DMFT was 2.05 ± 4.13 and 2.56 ± 4.20 in 5-8 years and in 9-12 years age group, respectively. Treatment need observed was 62.3% and 75.3% in 5-8 and 9-12 years age group, respectively. **CONCLUSION:** The study demonstrated that school children in Nagrota Bagwan, Kangra district suffer from high prevalence of dental caries and treatment needs.

KEYWORDS: Dental caries, Prevalence, Treatment need.

INTRODUCTION: Oral health is an integral part of the general health and well-being of an individual and is now recognized as equally important in relation to general health. Among common oral diseases, dental caries and periodontal diseases are the two foremost oral pathologies that remain widely prevalent and affect all populations throughout the life span¹. Oral diseases continue to have high prevalence despite the decline in dental caries in developed countries. The observation of the various studies shows the increasing levels of dental caries in children and adolescents in developing countries, in contrast to developed countries.^{2,3} The National Oral Health Survey and Fluoride mapping - 2003⁴ reported that 72.5% of 12 year old children and 75.4% of 15 year old children had dental caries. Knowledge of dental health and treatment needs of school children is important for developing appropriate preventive approaches, anticipating utilization patterns, and planning effectively for organization and financing of dental resources. Therefore, the following study was taken up with the aim to evaluate the prevalence of dental caries and treatment need in the School going children of the field practice area in medical college in Kangra District of Himachal Pradesh State.

METHODOLOGY: The cross sectional study was conducted at Nagrota Bhagwan block of Kangra district, Himachal Pradesh which is a field practice area of the Department of Community Medicine, Dr. R.P. Govt. Medical College, Tanda. Nagrota Bhagwan block has a population of 1,

10,039 which inhabit a total number of 213 rural villages and 7 urban wards. The study area is about 10 km away from the medical college. School children within the age group of 5-12 years, studying in all the Govt. primary schools of study area were enrolled in the study. A total number of 3096 school children studying in 96 Govt. primary schools of the block were recruited for the study. It comprises approximately 12-13% of the total population of the block.

Collection of the data: Each school was visited a maximum number of three days in a week or less till all children were examined. If it required more than three days, then remaining children were covered in subsequent week. Indices were used for calibration and appropriate changes were made during the pretesting of the Performa.

Data was collected regarding the prevalence of dental caries using dentition status and treatment need index as described by WHO-Oral health survey manual, 1997.

Oral health examination of each subject was done by seating each one on a chair in the daylight with subject facing away from the direct sunlight using required instruments. The Proforma was filled up by two field investigators. Each field investigator was handed over separate age groups of school children (One for 5-8 years and another for 9-12 years) in order to avoid interviewer and information bias.

Data entry and analysis: Data obtained was entered in an MS-Excel spreadsheet and analyzed using Epi info software. The statistical analysis was done using t- test for continuous variables and Chi-square test for categorical data. A level of $p \leq 0.05$ was considered statistically significant and $p \leq 0.001$ was noted as highly significant. The accuracy of data entry was checked by re-entering 10% of the data and the consistency of the data was compared.

RESULTS: After conducting the survey, it was found that the total number of students enrolled for examination was 3069. The survey included two age groups with different percentage of males and females among them.

Among 5-8 years of age group, 54.6% were males and 45.3% were females.

Among 9-12 years of age group, 49.6% were males and 50.3% were females.

Age-group	Male	Female	Total
	No.(%)	No.(%)	No.(%)
5-8	1027(63.5)	851(58.6)	1878(61.2)
9-12	591(36.5)	600(41.4)	1191(38.8)
Total	1681	1451	3069

Table 1: Distribution of Sample

Dental caries assessment in study population: [Table- 2(a), (b), (c)]

The prevalence of dental caries varied among the study subgroups. Overall, prevalence of caries subjects in the study population was 58.4%. High caries prevalence was seen in the age group of 9-12 years (61.2%) as compared to the age groups of 5-8 years (56.8%).

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Higher caries subjects were found among the females (60.9%) as compared to males (56.2%). However, the difference was not significant. Females had significantly high prevalence of dental caries in the age group of 5-8 years as compared to males in the same age group.

Mean dmft/DMFT scores were 2.05 ± 4.13 and 2.56 ± 4.20 in 5-8 and 9-12 years age groups, respectively. The decayed component accounted for more than 85% of these values. There were significant differences in means of decayed component (D+d) among both the age groups, with the highest mean (D and d) scored by 9-12 years age group (1.37 and 1.17, respectively).

The females had significantly higher mean dmft/DMFT as compared to males in 9-12 years age group.

Age	Prevalence of dental caries										
	Total			p	Male			Female			P
	Total	Caries	Prevalence		Total	Caries	Prevalence	Total	Caries	Prevalence	
5-8	1878	1066	56.8	2.4	1027	561	54.7	851	505	59.3	0.03*
9-12	1191	728	61.2		591	349	59.2	600	379	63.1	0.14
Total	3069	1794	58.4		1618	910	56.2	1451	884	60.9	

Table 2(a): Prevalence of dental caries

*p<0.05

Intraanalysis of dmft/DMFT									
	d Mean±SD	m Mean±SD	f Mean±SD	dmft Mean±SD	D Mean±SD	M Mean±SD	F Mean±SD	DMFT Mean±SD	dmft+DMFT Mean±SD
5-8	0.92±1.8	0.007±0.16	0.0±0.0	0.93±1.9	1.11 ±2.06	0.012±0.19	0.0±0.0	1.12±2.0	2.05±4.13
9-12	1.17 ±1.9	0.004±0.09	0.0±0.0	1.17±2.0	1.37±2.20	0.011±0.17	0.0±0.0	1.39±2.2	2.56±4.20
P	.042*	.061		0.31	0.32	.92		0.43	0.35

Table 2(b): The dmft /DMFT and its components scores (mean ± SD)

*p<0.05

Age	Male dmft+DMFT (Mean±SD)	Female dmft+DMFT (Mean±SD)	Total dmft+DMFT (Mean±SD)	p-value
5-8	1.01±2.02	1.05±2.09	2.05±4.13	.622
9-12	1.25±2.11	1.31±2.15	2.56±4.20	.046*

Table 2(c): The dmft/DMFT and its components scores (mean ± SD) by age and gender distribution

*p<0.05

Treatment needs of the study population [Table -3]:

In 5-8 years of age group:- Out of 1170 (62.3%) requiring treatment, the need for pit and fissure sealants was highest (49.9%), where need for restorative care came next [(38.2%, one surface restoration), (27.6%, two surface restorations)] followed by the need for pulp treatment (17.5%) and extraction (11.1 %).

In 9-12 years of age group:- Out of 898 (75.3%) requiring treatment, the need for pit and fissure sealants was highest (41.0%). The need for restorative care came next (31.2%, one surface

restoration), (39.9% two surface restorations) followed by the need for pulp treatment(13.5%)and extraction(8.9 %)).

There was no significant difference in the treatment need in both the age groups. However, the treatment need was significantly higher among females in 9-12 years of age group as compared to males in the same age group($p=0.0005$).

The treatment need in study population showed increase with age.

Age Group		Treatment required	Pit and fissure sealants	1 surface filling	2 surface filling	Pulp therapy	Extraction	p-value
		No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	
5-8	Male	590(50.4)	283(47.9)	212(27.1)	165(27.1)	94(15.9)	52(8.9)	1.97
	Female	580(49.5)	301(51.8)	235(40.5)	158(27.2)	111(19.1)	80(13.9)	
	Total	1170(62.3)	584(49.9)	447(38.2)	323(27.6)	205(17.5)	129(11.1)	
9-12	Male	420(46.7)	178(42.3)	130(30.9)	93(22.14)	58(13.8)	32(7.8)	0.0005*
	Female	478(53.2)	191(39.9)	151(31.5)	98(20.5)	64(13.3)	46(9.8)	
	Total	898(75.3)	369(41.0)	281(31.2)	191(39.9)	122(13.5)	79(8.9)	
		2068(67.3)	953(46.0)	728(35.2)	514(24.8)	445(21.5)	210(10.2)	2.1

Table 3: Treatment need of children

* $p<0.001$

DISCUSSION: This study assessed the prevalence of dental caries and evaluated the treatment need of children in primary schools of rural area.

The overall caries prevalence of subjects was 58.4% with high caries prevalence among females as compared to males, and in 9-12 years age group as compared to 5-8 years age group. The mean dmft/DMFT was 2.05 ± 4.13 and 2.56 ± 4.20 in 5-8 years and in 9-12 years age group, respectively. The values of this study were higher as compared to values reported in studies by Shailee F et al (2012)⁵, Grewal H et al (2011)⁶ and Bajoma et al (2004)⁷. However, the values were almost similar to DMFT of 2.4 reported by National Oral Health Survey.⁴ The major component was decayed components which was significantly higher in 9-12 years age groups compared to 5-8 years age group. Females had significantly higher mean DMFT value than males which is in line with the findings of other studies.⁸⁻¹⁴ This finding may be due to the fact that teeth erupt earlier in females than males which means female's teeth would have been exposed to oral environment for a longer period than the males of the same age. The reason for the higher prevalence of dental caries in 9-12 years as compared to 5-8 years may be that caries being a continuous and cumulative process had obviously increased over a span of years; moreover, the number of teeth are more as the age increases.

Treatment need observed at baseline examination was higher in the present study i.e. (62.3% and 75.3% in 5-8 and 9-12 years age group, respectively;) as compared to other studies.¹⁵ When categorized according to treatment needs, it was found that the greatest need was for fissure sealants, one surface restoration followed by two-surface restorations, pulp restoration, and extractions. This is similar to the findings of other studies¹⁵⁻¹⁹ except the need for fissure sealants which was higher in present study compared to other studies.²⁰ It could be due to the difference in the lifestyles, dietary habits and socioeconomic factors in children.

CONCLUSION: In conclusion, the present study demonstrated that school children in NagrotaBagwan Block of Kangra district suffer from high prevalence of dental caries and treatment needs. As this study is probably not representative of all school children in Kangra district, studies that would cover more schools are recommended. Additional variables such as oral health status, knowledge and attitudes, patterns of sugar consumptions, oral hygiene behaviour, social habits and fluoride intake may be included.

ACKNOWLEDGMENTS: We wish to express our respectful thanks to Director General, ICMR, New Delhi for giving us the opportunity to undertake the study. We are deeply indebted to ICMR, New Delhi for providing financial support to conduct the study.

REFERENCES:

1. Barmes DE. A global view of oral diseases: today and tomorrow. *Community Dent Oral Epidemiol* 1999;27(1):2-7.
2. Burt BA. Trends in caries prevalence in North American children. *Int Dent J* 1994;44:403-13.
3. Nithila A, Bourgeois D, Barmes DE, Murtomaa H. WHO global oral data bank, 1986-96: an overview of surveys at 12 years of age. *Bull World Health Organ* 1998;76:237-44.
4. National Oral Health Survey and Fluoride Mapping. An Epidemiological Study of Oral Health Problems and Estimation of Fluoride Levels in Drinking Water. Dental Council of India, New Delhi, 2004;32:67-78.
5. Shailee F, Sogi GM, Sharma KR, Nidhi P. Dental caries prevalence and treatment needs among 12- and 15- Year old schoolchildren in Shimla city, Himachal Pradesh, India. *Indian J Dent Res* 2012;23(5):579-84.
6. Grewal H, Verma M, Kumar A. Prevalence of dental caries and treatment needs amongst the school children of three educational zones of urban Delhi, India. *Indian J Dent Res* 2011;22(4): 517-9.
7. Bajoma AS, Rudolph MJ. Dental caries in 6, 12 and 15 year old Venda children in South. *East Afr Med J* 2004;81:236-43.
8. Shammery A, Guile EF. Prevalence of caries in primary schoolchildren in Saudi Arabia. *Community Dent Oral Epidemiol* 1990;18:320-1.
9. Salapatta J, Blinkhorn AS, Attwood T. Dental health of 12 year old children in Athens. *Community Dent Oral Epidemiol* 1990;18:80-1.
10. Obry-Musset AM, Cahen PM. Dental caries and oral hygiene in 12 year old children in Martinique. *Community Dent Oral Epidemiol* 1991;21:54-5.
11. Dummer MH, Addy M, Hicks R, Kingdom A. The effect of social class on the prevalence of caries, plaque, gingivitis and pocketing in 11-12 year old children in South Wales. *J Dent* 1987;15:185-90.
12. Sogi G, Bhaskar DJ. Dental caries and oral hygiene status of 13-14 year old schoolchildren of Davangere. *J Indian Soc Pedod Prev Dent* 2001;19:113-7.
13. Mishra FM, Shee BK. Prevalence of Dental Caries in school going tribal children in Ganjam District, Orissa. *J Indian Dent Assoc* 1982;54:375-7.
14. Saimbi CS, Mehrotra AK, Mehrotra KK, Kharbanda OP. Incidence of Dental caries in individual teeth. *J Indian Dent Assoc* 1993;55:23-6.

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15. Abid A. Oral health in Tunisia. Int Dent J 2004;54:389-94.
16. Dash JK, Sahoo PK, Bhuyan SK, Sahoo SK. Prevalence of dental caries and treatment needs among children of Cuttack (Orissa). J Indian SocPedodPrev Dent 2002;20:139-43.
17. Dhar V, Jain A, Van Dyke TE, Kohli A. Prevalence of dental caries and treatment needs in the school-going children of rural areas in Udaipur district. J Indian SocPedodPrev Dent 2007;25:119-21.
18. Kulkarni SS, Deshpande SD. Caries prevalence and treatment needs in 11-15 year old children of Belgaum city. J Indian SocPedodPrev Dent 2002;20:12-5.
19. Dhar V, Bhatnagar M. Dental caries and treatment needs of children (6-10 years) in rural Udaipur, Rajasthan. Indian J Dent Res 2009; 20: 256-60.
20. Blanaid Daly, Tim Newton and Paul Batchelor. Patterns of dental service use among homeless people using a targeted service. J of Public Health Dentistry 2009;70:45-51.

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Date of Submission: 07/12/2013.
Date of Peer Review: 09/12/2013.
Date of Acceptance: 12/12/2013.
Date of Publishing: 26/12/2013