

**Assessment of Dental health status, Oral health knowledge and oral hygiene practices among Visually Impaired residential school children of Himachal Pradesh in Northern India.**

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**Abstract**

**Background:** This study was planned to assess the dental health status of Visually impaired residential school children in Himachal Pradesh as special health care needs children and dental health is correlated to each other.

**Materials and methods:** A cross sectional study done on 121 visually impaired children between 6-18 years of age, 75(70.24%) males and 36(29.76%) were females. A study questionnaire was prepared to include demographic information and WHO oral health assessment form (2013) used to record dental caries status. To maintain oral hygiene, brushing frequency, brushing aid, type of diet and frequency of sugar was assessed among all the

children. Data was analysed using student’s test and ANOVA test was used at  $p \leq 0.05$ .

**Results:** The overall male had mean DMFT  $1.265 \pm 1.09$  % and female had mean DMFT  $1.194 \pm 1.09$  % respectively. Dental caries experience among residential school visually impaired children was low but there was significant high caries experience in primary dentition i.e.  $p \leq 0.001$  before admission to residential school.

**Conclusion:** Residential Visually impaired children have fair oral hygiene status in Himachal Pradesh. There is need of disciplined life style and regular routine screening and motivation and oral health education to parents as well as children to maintain good dental health status.

**Keywords:** Dental health status, dental caries, visually impaired

### Introduction

Special health care needs children have special and an integral important place in our society. So such children need special consideration and regular motivation to keep good health. The World Health Organization (WHO) defines blindness as “a corrected visual acuity in the better eye of  $<3/60$  and severe visual impairment as a corrected acuity in the better eye of  $<6/60$ .”[1] Variable access to dental care, inadequate oral hygiene, dental neglect and disability may account for differences however their diet, medication, physical limitations, lack of oral hygiene and the attitude of their parents and the health care providers all contribute to the poor oral hygiene. School children are the future building blocks of the society, from this period onwards an effective molding should be given to each child about the importance of oral hygiene. During this span, the habits which are learnt, last for ages and have a vast influence in one’s life. Thus, schools have a role to implement an absolute framework to reach children and secure a substantial substructure for healthy life at an early age [2]. Epidemiological surveys monitor population-level trends of oral health conditions, i.e. morbidity, analyzing possible factors influencing the disease pattern and treatment needs which help tailor oral health programs to meet real-life health needs. There is utmost need of individual training in oral care and plaque control in order to reduce the prevalence of dental caries among visually impaired children.[3] Cohen et al. found it is beneficial to teach in an integrated approach where visually impaired children were examined and instructed together with sighted children.[4]

Therefore the current study was conducted to establish the prevalence of dental caries (percentage with caries) and experience in the primary and permanent dentition (dmft

and DMFT) among special health care needs children and to estimate the dental health status by knowing risk indicators of dental caries so that measures can be taken accordingly.

### Aims and Objective

- The objective of the study was to assess the dental caries experience among residential school visually impaired children.
- To assess oral health knowledge and oral hygiene practices in visually impaired children.

### Materials and Methods

The cross sectional study was conducted on 121 children between 6 to 18 years of age in 4 different Institutionalized residential schools for special health care needs children in Himachal Pradesh.

### Ethical clearance and informed consent

Ethical approval for the study was obtained from the Institutional Ethical Committee of Himachal Dental College & Hospital Sundernagar. Informed Consent was obtained before conducting the clinical examination and education from Principal /authority of Institute and H.P. State Council for Child Welfare-3 Craig Garden, Shimla.

Children’s personal detail name, age, gender, date of birth, location and education level of parents was noted. A close ended interview questionnaire adopted from *WHO oral health questionnaire for children, 2013* [5] were asked to children in school open premises, oral health practices and utilization of dental services for all the children was asked as baseline information. DMFT was recorded by Klein, Palmer & Knutson’s DMFT index [6] and in primary teeth deft index by Gruebel [7] to determine impact of oral hygiene practices by dental caries. Dental caries experience was detected at the cavitation level only (detectable softened floor, undermined enamel or softened wall) by mouth mirror.

Criteria of “catching” or “retention” of the explorer was not used to detect caries.

Green and Vermillion index of OHI-S[8] was used to score the oral hygiene status of the patient. All the subjects were examined in premises of the respective residential schools, under adequate natural illumination ( Type III) using plane mouth mirror and No. 23 explorer [American Dental Association, 1970][9] by a single examiner to avoid inter-examiner variability . An explorer was used to remove large debris and to aid in assessing the oral hygiene.

### Results

A total of 121 Visually impaired school children were subjected to the study, Of which 75(70.24%) were males and 36(29.76%) were females. There were 49 children between 6-12 years while 72 were 13-18 years old. The questionnaire was analyzed according to their response. In this study 92.6% of children belonged to rural area, 4.96% periurban and 2.48% urban area (Table1). There was no significant difference on caries status based on gender. (Table 2) Mother education have significant direct correlation to dental health status of children as (Tables 3) depicted.

Regarding brushing habits 91.74% of the subjects brushed once daily as (Graph 1). 70.2% of children of study population had never visited dentist/dental health care services till now, (Graph 2) and the children who went for dentist only for emergency of pain or trouble with tooth or gums or mouth.

Regarding the role of sugar in producing dental caries, there was no association observed between the DMFT experience and the gender (p-value 0.797). The low degree of co-relation ( $r=0.0384$ ) observed between the number of sugar exposure and the DMFT experience and was found to be not significant (P value 0.392) as (Table 4).

Regarding dietary habits frequent snacking / biscuits/soft drink was found to be low in these children. It was observed that 12.4% of the individuals had poor oral hygiene, 69.4% of them had a fair level of hygiene and only 18.2 % of them had a good oral hygiene [Table 5].

### Discussion

The majority of the Indian populations live in rural areas and only less than 40% of children reside in urban areas. These children cannot avail dental facilities due to inaccessibility, financial constraints and stagnation of public dental health care services and therefore are most vulnerable to dental diseases.

But in this study 92.5% of children belonged to rural area and only 4.96% children reside in periurban area.[10] In rural area where lack of dental health awareness and dental health services can be factor for caries experience in children. As WHO also mentioned that prevalence of visual impairment directly related to low socioeconomic and geographic location

In males the entire mean dmft was 1.265% and in females mean dmft was 1.194% i.e. dental caries experience in our study was found to be slightly lower than figures commonly reported in other epidemiological studies in Mexico (both caries prevalence and dmft and DMFT scores), neither WHO/FDI goals for the year 2020 [11] or 2015 were reached. Bratthall also found similar i.e. low caries experience in special children.[12]

Besides children mother education and awareness is also an important issue for good dental health status. So mother/ health care provider/guardian should also be specially educated, guided and motivated for welfare of children overall health.

Most of the children are not aware of night brushing as mothers also not know the importance of night brushing. The children visit dentists only in the case of acute pain and never on the basis of preventive measures. So there is

need of regular screening, education about oral health as subject to teach them.

Regarding dietary habits residential children have disciplined life style, fix timing for food, less sugar consumption in between food, combination of different food as balance diet. It was found that frequent snacking as well as modern diet consumption was less in residential children as compared to others. That was the reason of low caries beside less oral health awareness. All Visually impaired children had no habit of any kind of tobacco consumption. Hawthorne effect (It is a form of reactivity in which subjects improve an aspect of their behaviour in response to their awareness of being observed) significantly improve the oral hygiene of such children by making them aware about oral health. This Study population of visually impaired children had low dental caries experience in residential school .Visually Impaired children experienced more caries in primary dentition than in permanent dentition in adolescence period and majority of children had fair oral hygiene. Unmet needs for dental caries were found to be high indicating very poor accessibility and availability of oral health care services. Constant monitoring, guidance and caries preventive programs and reinforcement by professionals encourage particularly to special health care needs as well as their health care providers can help to change their behaviour and maintain good oral hygiene practices in school children. Providing Oral hygiene maintaining kits free for such children can encourage them to make routine practice of oral hygiene. So group education as well as special school with special modified technique and special trained teachers can improve overall personality and health to such children.

Prashanth et.al found in their study that 91.76% of children had good oral hygiene, whereas

5.88% of children had fair oral hygiene, and only 2.35% of children had a poor oral hygiene status [13] while in our study only 18.2 % of them had a good oral hygiene, 69.4% of them had a fair level of hygiene and 12.4% of the individuals had poor oral hygiene.

### **Conclusion**

Present study revealed that visually impaired individuals have fair oral hygiene status, as they lack adequate knowledge about proper brushing techniques which was one of the reasons for dental caries. There is need of disciplined life style and regular routine screening and motivation to maintain good dental health status of such children. Dental home are to be established with dental care facility for the priority of welfare of disabled people. There is need for greater maternal education, social awareness, developing good habits and oral hygiene practices to make our society caries free.

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**Legends Figure and Tables**

Location	Frequency	Percent
Urban	3	2.48%
Periurban	6	4.96%
Rural	112	92.56%
Total	121	100.00%

Table: 1 Showing Distribution Of Study Subject According To Location

	Observation	Total	Mean	Var	Std Dev
Male	83	105	1.265	1.1972	1.094
Female	36	43	1.194	1.1897	1.090

Table 2: Showing gender wise comparison of mean DMFT score among visually impaired children

Mother Education	DMFT						TOTAL	Chi-square	df	Probability						
	0	1	2	3	4	5										
No formal schooling	1	3	4	8	2	0	0	27	62.736	4	35	0.0027				
Less than primary school	3	2	14	2	0	0	21									
Primary school completed	1	1	7	17	2	0	1	38								
Secondary school completed	4	2	3	1	1	0	11									
High school completed	9	7	1	0	0	0	17									
College/Univerisity completed	0	0	1	0	0	0	1									
No female adult in household	0	0	0	2	0	0	2									
Don't know	1	0	1	0	0	0	2									
4																
TOTAL	1	22	45	9	1	1	119									

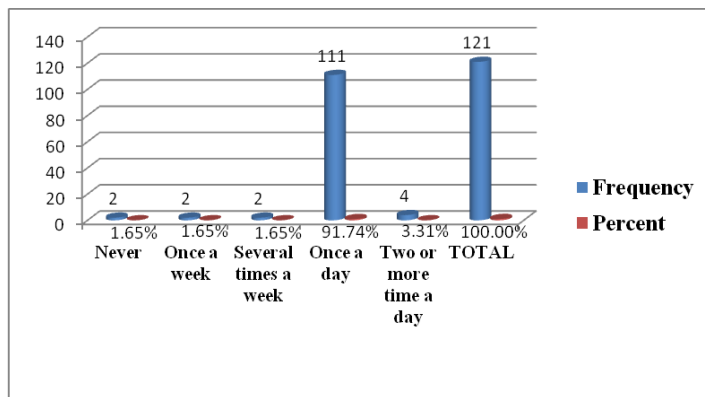
Table 3: Co-relation of study Sample with education of mother and DMFT Score

Variable	R	DF	t-value	p-value
DMFT & No. of Sugar	0.0384	646	.976	.328

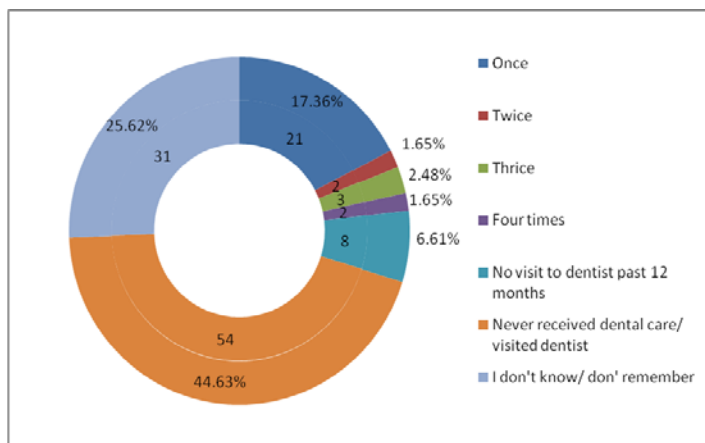
Table 4: Showing co-rrelation between DMFT and role of sugar in producing dental decay

OHI-S	GOOD	FAIR	POOR
TOTAL CHILDREN	22	84	15
PERCENTAGE	18.2%	69.4%	12.4%

Table 5: Showing Oral Hygiene Index-Simplified score percentage in visually impaired children



Graph 1: Oral Hygiene Practices In Frequency of Tooth brushing Habits in Study Population



Graph 2: Distribution of Study Sample Frequency of Utilizing Dental Services