

# Oral Health Knowledge, Practice, Oral Hygiene Status and Dental Caries Prevalence Among Visually Impaired Student in Alnoor Institute of Almadinah Almunawwarah at Saudi Arabia

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**Abstract Aim:** to investigate the oral health knowledge, practice, oral hygiene status and the prevalence of dental caries among visually impaired student in Alnoor institute of Almadinah, Saudi Arabia. **Material and methods:** the study population consisted of 64 visually impaired student attending Alnoor institute in Almadinah in the age group of (7-24) years old. Interview questionnaires were used to assess oral health knowledge and practice through. The simplified oral hygiene index was used to assess oral hygiene and DMFT/dmft for caries prevalence. **Result:** the study revealed 4.84% of the students were free of caries while caries prevalence is 95.16% which is very high and coincide when comparing it to control group from other study in the same area. The mean of DMFT/dmft is low 0.24/0.59 and the reason for that may be various, ranging from biochemical differences in salivary buffering to differences in living environment, dietary and hygiene habits. This study revealed insignificant between neither the mean of DMFT/dmft for both gender Male & Female 0.24/0.57 and 0.24/0.65 nor the mean of plaque index 1.5/1.33 respectively. Also the age group distribution was insignificant. Among Survey 93.7% agree with role of sugar in leading to caries while 3.1% disagree & 3.1% they don't know. There is 85.9 % do brushing of their teeth and 14.1% they don't. There is 87.5% agree with that brushing will prevent caries but 9.47% they disagree. For the method of brushing it was found that 93.2 % use tooth brush 3.4 % use fingers and 3.4% use meswak. **Conclusion:** the finding of this study revealed high caries prevalence and low DMFT/dmft and more than 2/3 of the sample have equal or greater than 1-2 soft debris accumulation. A little extra care by the parent or caretaker regarding oral hygiene can give drastic result in reduction of dental caries and gingival disease.

**Keywords:** oral hygiene, prevalence of dental caries, visually impaired

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## 1. Introduction

Blindness is defined by World Health Organization as having a: "visual acuity of less than 3/60 m or corresponding visual field loss in the better eye with the best possible correction ", meaning that whilst a blind person could see a distance of 3 m, a non-visually impaired person could see 60 m. Visual impairment relates to a person's eyesight which cannot be corrected to normal vision.

The WHO estimates that there are 40 million blind persons in the world. Visually impaired individuals cannot visualize the plaque on the teeth surface so even

understanding the importance of oral hygiene is difficult for them which result in progression of dental caries as well as inflammatory disease of the periodontium (Mann et al, 1977) [1].

Dental caries or periodontal disease are not a priority of the disable student's families (Tesini'1981; cutron, 1971) [2].

Oral health education has been shown to have a positive impact in lowering plaque score (Zehaati and Motlagh, 2006) [3].

There is little information available regarding the dental health care and needs of such individuals. Such information is important to improve the oral health in these special need children. The aim of this study was to

investigate the oral health knowledge, practice, oral hygiene status and the prevalence of dental caries among blind student in Alnoor institute of Almadinah, Saudi Arabia.

## 2. Materials and Methods

### 2.1. Study Population and Sample Design

The study was conducted among Alnoor institute for females and males and the public intermediate school which included 4 female girls. A total no of 80 (51 male - 29 female) were reached. The sampling technique was convenience. All blind children attending the governmental schools "male and female" from 1st to 9th grade were included. Any child with combined disability was excluded. The study was carried out on a 7 - 24 aged students. An interview questionnaire was done among students in the classroom. The clinical exam forms were attached to the questionnaires. Each student keeps the questionnaire with him/her for the examiner to record the clinical exam on the same form.

### 2.2. Measures and Definitions

- **DMFT and dmft index:** Most of the students were in the age of mixed dentition (6 - 18). The DMFT and dmft were used to measure the prevalence of dental caries/teeth. Each child is given a separate index, one for permanent teeth and another for primary teeth.

- **Plaque and calculus index:** the simplified oral hygiene index was used to record the plaque in six teeth surfaces. The six teeth are:

Maxillary right first molar "buccally", right first incisor "labially", left first molar "buccally".

Mandibular right first molar "lingually", left first incisor "labially", left first molar "lingually".

Criteria for scoring:

0= no debris or stain.

1= soft debris covering not > 1/3 of tooth OR the presence of extrinsic stains regard less of surface area covered.

2= soft debris covering > 1/3 but not > 2/3 of tooth surface.

3= soft debris covering > 2/3 of tooth surface.

DI - S = total debris score / no. of teeth examined.

The visually impaired children were examined at their respective schools, seated on an ordinary chair, and sharp metallic prop and metallic mirror were used.

- **Dental health knowledge**

Through the interview the student were asked if tooth brushing prevent caries, bleeding, and halitosis. They were also asked if sweets have a role in tooth caries. The students were asked generally if they knew if flurid has an advantage on their teeth or not. According to the student answers on where did they learn to brush their teeth, they were three groups, from school, television, and home.

- **Oral health status and Past dental visit:**

The interview questionnaire included questions about the oral health status, the mode of tooth cleaning, the substance used for cleaning teeth, when and who help if needed, the use of dentifrices, the use of dental floss and the tooth cleaning frequency. Based on a question on past dental visits, the sample was divided into four groups, namely students who reported through the interview that

they had never visited a dentist before, students who had visited the dentist in the past 6 months, students who have been to the dentist in more than 6 months and finally those who had visited a dentist since more than one year. The reason behind seeking the dentist was also assessed for check - ups or pain only.

- **General oral examination:**

All school students received a general oral examination to identify their need for oral/dental health but not intended to be diagnostic. The examiner looked for plaque, gingivitis, caries and any oral mucosal lesions.

- **Operational design:**

After a preliminary visit to the school was conducted, the data was collected through a double field trip to the female primary school by the intern researchers and the female intermediate school. The male institute included the student from grade 1 to 9; a double visit was done to them by the intern researcher and a helping friend to write down the data.

An educational health program was done to the school students through oral short story, pamphlets and models. Gifts were also distributed to them supplied from the SDS almedinah.

- **Administrative and ethical design:**

Approval was granted by the Minister of Education. A written Consent was distributed through the student to be signed by the caregiver. Following the oral examination, an examination card was given to each student to indicate which dental - related services the student might need. Confidentiality of response result and to avoid response bias, teachers were asked not to enter the classroom during both questionnaire administration and clinical examination.

- **Data analysis:**

The data analysis was carried out by SPSS software version 16. Descriptive statistics as mean, standard deviation and proportion will be used as indicated.

## 3. Result

A total of 80 visually impaired children from Alnoor institute in Almadinah, KSA. Upon the field trips, 4 children were absents and one student refused to get the examination. With the exclusion of 11 student which had multiple disability, a remaining of 64 child were examined of (DMFT - dmft - green &vermillion Plaque index) (Table 1) and had interview questionnaire. Out of total there were 42 (66%) Males and 22 (34%) Females, all in the age group of (7-24) years old. Maximum numbers were collected of 10 & 15 years of age and overall mean of age was 12.1 years. Each child had interview questionnaire regarding oral hygiene practice, attitude and knowledge.

Table 1

	N	Minimum	Maximum	Mean	Std. deviation
DMFT	60	.00	.53	.2370	.13756
dmft	37	.00	1.00	.5943	.35046
Plaque Index G&V	62	.37	2.66	1.4402	.48266

Caries prevalence revealed 95.16% of the visually impaired children have Caries. The mean of DMFT/dmft

in Males was 0.24/0.57 and 0.24/0.65 in Females. Plaque index was 1.5 in Males and 1.33 in Females. While the mean of DMFT/dmft in elementary school level (n=50 students) was 0.23/0.56 and 0.28/0.8 in middle school level (n=14 students). Plaque index was 1.3in elementary school level and 1 in middle school level.

According to age group of (7-12) the mean of DMFT/dmft was 0.22 /0.55 and mean of Plaque index was 1.27. While in the age group (13 and above) the mean of DMFT/dmft was 0.25/0.74 and the mean of Plaque index was 1.64 (Table 2).

Table 2

Age		N	Mean	Std. deviation
7-12	DMFT	32	.2244	.15475
	dmft	28	.5464	.31355
	Plaque Index G&V	34	1.2729	.37087
=>13	DMFT	28	.2514	.11597
	dmft	9	.7433	.43347
	Plaque Index G&V	28	1.6432	.52937

Plaque index revealed that 69.35% have >1-2 soft debris accumulation while 22.58% have 0 - 1 soft debris accumulation and only 8% have >2-3 soft debris accumulation (Figure 1).

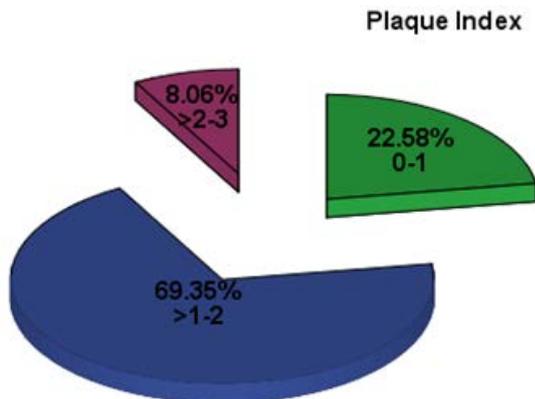


Figure 1.

Interview questionnaire revealed that 87.5% said brushing will prevent caries, while 9.3% said No, and 3.1% they don't know (Figure 2). While 93.76% revealed that candies will cause caries and 3.1 % said No and 3.1% they don't know (Figure 3).

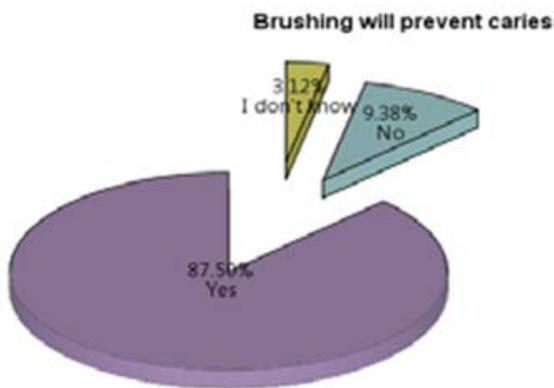


Figure 2.

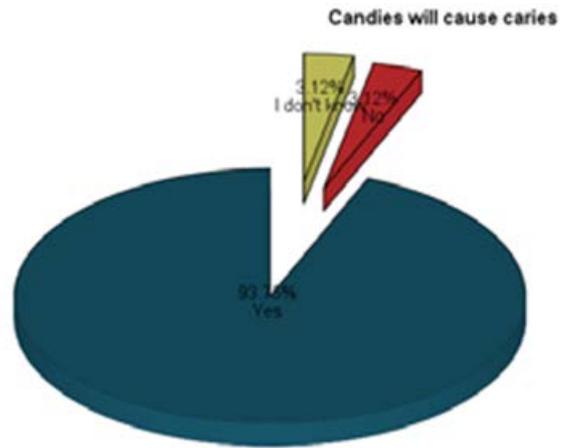


Figure 3.

There was 53% agree with fluoride benefit for teeth, and 35.9% they don't know while 10.9% disagree (Figure 6).

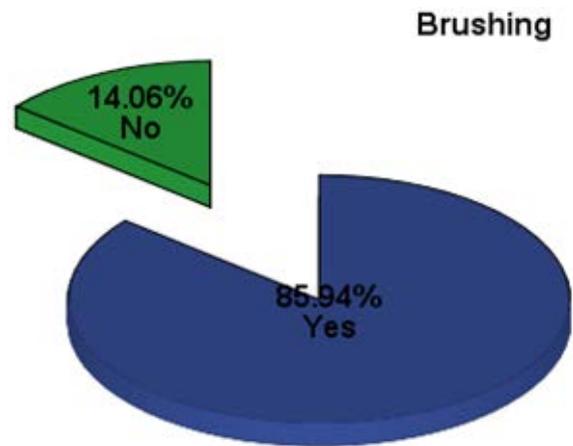


Figure 4.

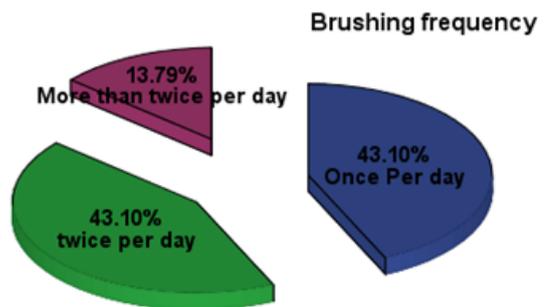


Figure 5.

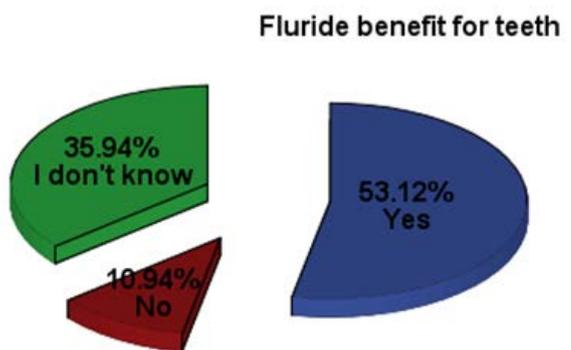


Figure 6.

There was 85.9% brushing their teeth while 14.1% they don't (Figure 4). Brushing Frequency revealed that 43.1%

brush their teeth once per day and also 43.1% brush their teeth twice per day while 13.8% brush more than twice (Figure 5).

Among survey it was found that 48.8% brush their teeth before sleeping time, and 32% at morning while 13.7% after meals and 5 % after eating of candies (Figure 7).

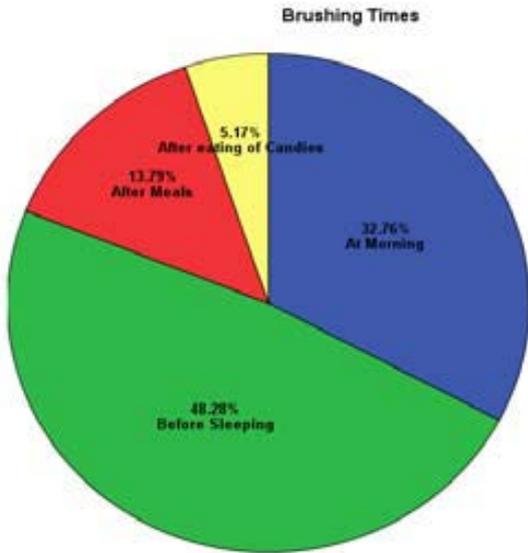


Figure 7.

For the method of brushing it was found that 93 % use tooth brush 3.4 % use fingers and 3.4 use meswak (Figure 8).

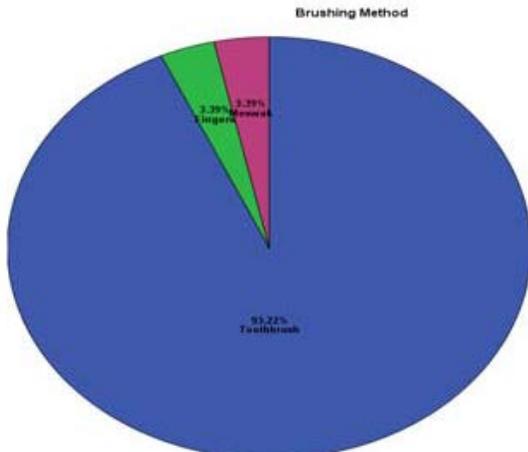


Figure 8.

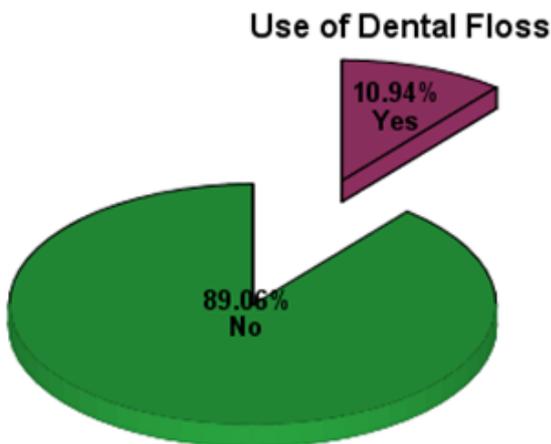


Figure 9.

The interview questionnaire revealed that 62% they are independent in brushing their teeth without any help, while 17 helped by mothers and 10 % helped by brother & sister while 6% helped by father and 3% helped by others (Figure 9).

Only 10.9 % use dental floss and 89% never used it (Figure 10).



Figure 10.

For the source of brushing education the survey revealed that the majority learned brushing from Home 76%. And 11% they don't remember while 8.5 learn from schools and 3% from T.V (Figure 11).

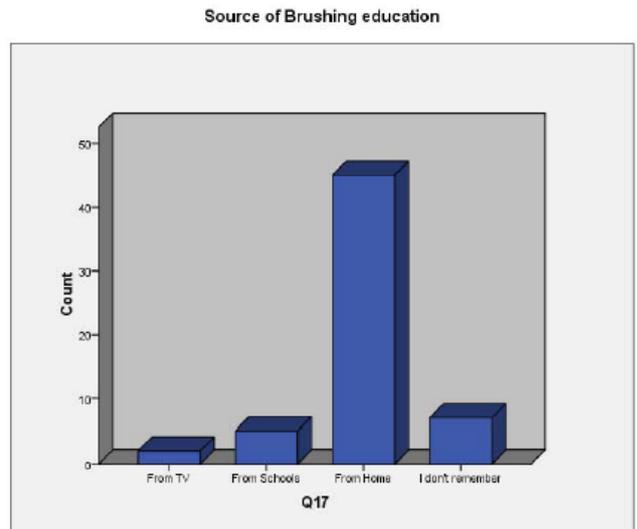


Figure 11.

#### 4. Discussion

Dental disease are one of the common problems found in children good oral hygiene is important to all normal children for proper mastication, digestion, appearance, speech and health but it even more important for handicapped children. The process of developing oral disease, prevention and treatment modalities does not differ in disable individual from non- disable. A Study completed by change and shih found that student with

visual impairment were less knowledgeable about their oral care [4]. In the present study, in contrast to the former, the blind student had better knowledge regarding dental health care, 93% know the role of sugar in developing dental caries, and 87.5% know that brushing will prevent caries.

In study conducted by Ahmed et al most of blind students extend having poor oral hygiene total of 80 visually impaired students were examined, of which 44(55%) were having poor oral hygiene and among them 22.7% were having dental caries [5].

On the other hand, in a study conducted by ST Prashanth et al they found that 34.1% of children had dental caries and only 8% of the blind children have poor oral hygiene. 69.4% of children had dental caries in deciduous dentition and 35.2% of children had dental caries in permanent dentition [6].

Goreeleg et al, who did not find any significant relationship between dental decay and blindness among 120 blind students [7].

The present study provide health information on a sample (n= 64) of 7-24 year old visually impaired students and the low DMFT/ 0.24/0.59 results in the present study coincide with that found in Jinan alousi study in Iraq [8].

The reasons for these differences in caries increment may be various, ranging from biochemical differences in salivary buffering to differences in living environment, dietary and hygiene habits, different proportion of salivary component and possible difference in chemical composition of the saliva compared to normal children [9].

This study revealed insignificant relation between neither the mean of DMFT/dmft for both gender Male & Female 0.24/0.57 and 0.24/0.65 nor the mean of plaque index of both gender 1.5/1.33 respectively. Also the age group distribution revealed insignificant relations.

Plaque index was significant in which 69.35% have >1-2 soft debris accumulation while 22.58% have 0-1 soft debris accumulation and only 8% have >2-3 soft debris accumulation, this might because the visually impaired individual cannot visualize the plaque on their tooth, So we need to improve the education modalities to visualize the preventive ways of oral disease and permit for the visually impaired to apply it perfectly.

Among Survey 93.7% agree with role of sugar in leading to caries while 3.1% disagree & 3.1% they don't know, which coincide with study of Ahmed.M.S et al [5], & Bhatnagr et al [6]. There is 85.9% do brushing of their teeth and 14.1% they don't. There is 87.5% agree with that brushing will prevent caries but 9.47% they disagree. For the method of brushing it was found that 93.2 % use tooth brush 3.4 % use fingers and 3.4% use meswak.

The interview questionnaire revealed that 62% they are independent in brushing their teeth without any help, while 17% helped by mothers and 10 % helped by brother & sister while 6% helped by father and 3% helped by others. Only 10.9 % use dental floss and 89% never used it.

In this study of visually impaired students samples, there was not any significant relationship between dental caries and oral hygiene practice with type of cleaning tools (Toothbrush, Finger and Meswak), use of dentifrices Or, frequency of cleaning (morning, after meals, after eating candies or before sleeping) and neither it was significantly related with knowledge about role of sugar consumption on dental caries nor with important of visiting Dentist. But there is significant dental caries in relation with those help the blind individual in brushing and the use of dental floss.

## 5. Conclusion

The present study shows not more worsening of oral health status in the study population.

A little extra care by the parent or caretaker regarding oral hygiene can give drastic result in reduction of dental caries and gingival disease

## Acknowledgements

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