

# Examining oral hygiene status and care needs of deaf and blind 6–12 years old exceptional school children in Kermanshah in 2015

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## ABSTRACT

**Introduction:** Controlling and preventing oral diseases of patients with mental and physical disabilities had become one of the most important topics within the realm of dentistry researches. The main objective of this study was to examine oral hygiene and care needs of deaf and blind 6–12 years old exceptional school children in Kermanshah in 2015. **Materials and Methods:** Oral hygiene of 51 deaf and blind 6–12 years old exceptional school children in Kermanshah in 2015 was examined in this study; indicators which underwent assessment included DMFT/decay, missing, falling, teeth (dmft), Gingival Index (GI), Plaque Index (PI), brushing, and flossing; the amount of used Unmet Treatment Need (UTN) was measured using DMFT/dmft index, and collected data were analyzed using SPSS, version 18. **Findings:** The mean and standard deviation of GI and PI of the 51 deaf and blind students examined turned out to be  $1.39 \pm 0.30$  and  $0.86 \pm 0.15$ , respectively; DMFT, dmft, and UTN of the blind students were  $1.31 \pm 1.20$ ,  $2.81 \pm 2.81$ , and  $0.76 \pm 0.34$ , respectively; these values turned out to be  $1.81 \pm 2.16$ ,  $2.08 \pm 3.48$ , and  $0.85 \pm 0.31$ , respectively, in case of deaf students. According to the results of this study, 18.7% of blind students and 27% of deaf students brushed their teeth once on a daily basis. **Conclusion:** Based on the results of this study, the incidence and severity of dental caries, particularly in primary teeth, were high among these children (mean: 2.06) and a large number of their teeth needed treatment (UTN: 1.18). In comparison to their peers, these group of children had lower state of oral health; therefore, a systematic, long-term is definitely required for the improvement of oral hygiene of studied patients.

**Keywords:** Blind children, care needs, deaf children, DMFT, oral hygiene

## Introduction

Oral hygiene plays an important role in maintaining and promoting the health of society. After years of efforts in the field of oral and dental diseases, and finding new therapies, many countries have concluded that this approach will do no good in preventing dental caries and periodontal diseases; thus, it is recommended to work on finding preventive strategies prior to the incidence of such problems.<sup>[1]</sup> Recognizing health status

and necessary needs of an area, which is realized through close investigation of exact statistics and observation of existing rates and facilities, is a prerequisite for implementing required preventive actions within the realm of oral hygiene.<sup>[2]</sup>

As indicated by reports of relevant agencies and organizations, the most important target group of education, prevention, and early treatment are children; tooth decay, dealing with which is one of key slogans of 21<sup>st</sup> century, is a global pandemic among children.<sup>[3]</sup> Dental problems will have adverse effect on the quality of the life of children and they might continue into the adulthood of the individual.<sup>[4]</sup> The age range of 6–12 years is

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the time of the eruption of permanent teeth, and maintenance of permanent teeth is very important at this time.<sup>[5]</sup> According to the statistics of European countries, 61% of 6–12 years old children have one decayed and one fallen tooth.<sup>[6]</sup> According to comprehensive research conducted in 1998 in Iran, the mean of decayed, missing, and fallen teeth turned out to be 1.2, 0.06, and 0.23, respectively.<sup>[7]</sup> According to social dentistry study conducted in England, the mean DMFT turned out to be 0.86, with D, M, and F being 0.39, 0.06, and 0.41 in order.<sup>[8]</sup>

According to the findings of studies and researches, 6–12 years is a very effective age in preventing oral diseases and improving oral health.<sup>[9,10]</sup> Providing oral health instruction and creating good habits during primary education is very effective in enhancing health status and establishing lifelong positive oral habits;<sup>[11]</sup> however, there are children educating of whom is more difficult than normal ones; this group of exceptional children, the blind and the deaf being a major group of them, suffer a wide range of mental and physical disabilities.<sup>[12]</sup> Families are paying less and less attention to the health of exceptional children due to several factors, such as human population growth, increased urbanization, and socioeconomic problems; however, according to reports and statistics, the number of exceptional children has not only decreased but also gone higher and higher.<sup>[13]</sup> Although these children are paid less and less attention to and cost more and more in the field of education, implementing efficient education and specific clinical approaches can function as a combinational procedure toward dealing with these children.<sup>[14]</sup> Given the above-mentioned points, oral hygiene of 51 deaf and blind 6–12 years old exceptional school children in Kermanshah in 2015 was examined in this study; close investigation and analysis of oral hygiene of these children provides more comprehensive and precise understanding of care needs of these children and, consequently, implementing more efficient policies to decrease the rate of dental decay and control the progression of periodontal diseases.

## Materials and Methods

The statistical population of this cross-sectional study included all 6–12 years exceptional students who were studying in schools of Kermanshah in 2015. Given the limited number of subjects, sampling was done using census method. Prior to the initiation of the study, permission of education authorities was acquired and necessary coordination was conducted. After explicating the objective and procedure of this study, written consent of participating subjects and their parents was acquired; it was, also, stated that participants are allowed to leave study whenever they did not feel like continuing their cooperation. Questionnaire and clinical observation were used to collect required data. The questionnaire included items concerning the use of brushing and flossing, methods, and times of these two actions; then, clinical examination was carried out. Examination was conducted in a room with a chair, desk, dental mirror, and probe, and all health and care measures were taken into consideration during the examination. First,

oral health status of patients was recorded according to global indexes of Plaque Index (PI); then, gingival status was assessed using Gingival Index (GI); finally, DMFT and decay, missing, falling, teeth (dmft) were determined and treatment need was specified using Unmet Treatment Need (UTN). The percent of untreated decayed teeth was measured using dmft/DMFT index. The frequency and percent of children who had, at least, one decayed teeth were used to measure the rate of children in emergent need of treatment.<sup>[15,16]</sup> Finally, collected data were collected using SPSS, version 18.

## Findings

This study included 51 students, 33 of whom were boys (64.7%) and 18 girls (35.3%); the mean and standard deviation of the age of studies' subjects turned out to be  $9.96 \pm 1.70$ ,  $10.11 \pm 1.57$  for girls and  $9.88 \pm 1.78$  for boys, respectively. The mean and standard deviation of PI and GI turned out to be  $1.39 \pm 0.30$  and  $0.0 \pm 86.15$ ,  $1.39 \pm 0.31$  and  $0.85 \pm 0.17$  for boys and  $1.39 \pm 0.30$  and  $0.88 \pm 0.12$  for girls, respectively.

DMFT, dmft, GI, PI, permanent teeth, and primary teeth of students were assessed, and the results are presented in Table 1. It must be mentioned that two students, the information of whom are separately recorded, were both blind and deaf.

Based on the answers, these children gave to questions presented to them, 13 blind students (81.2%) did not brush their teeth on a daily basis; rather, they occasionally brushed their teeth; 3 blind students (18.7%) brushed their teeth regularly, at least once a day; however, none of them flossed their teeth. About 67.5% of students with hearing disabilities brushed their teeth occasionally; two students (5.4%) stated that they never brushed their teeth and seven students (18.9%) brushed their teeth once a day; three students said that they brushed their teeth twice a day. None of the students with hearing disabilities flossed their teeth.

**Table 1: Analysis of DMFT, dmft, GI, and PI indicators and the status of permanent and dental teeth of 6-12 years old blind and deaf students of exceptional schools in Kermanshah**

Variable	Blind			Deaf		
	Number	Average	SD	Number	Average	SD
D	16	0.94	1.18	37	1.49	2.09
M	16	0.25	0.77	37	0.22	0.48
F	16	0.13	0.34	37	0.11	0.52
DMFT	16	1.31	1.20	37	1.81	2.16
D	16	2.62	2.92	37	2.03	3.50
M	16	0.00	0.00	37	0.03	0.16
F	16	0.19	0.54	37	0.03	0.16
dmft	16	2.81	2.81	37	2.08	3.48
UTN	16	0.76	0.34	37	0.85	0.31
GI	16	1.35	0.32	37	1.39	0.30
PI	16	0.81	0.19	37	0.87	0.14

SD: standard deviation; dmft: decay, missing, falling, teeth; UTN: Unmet Treatment Need; GI: Gingival Index; PI: Plaque Index

## Discussion

With the focus being on DMFT, dmft, GI, and PI, there have been numerous studies conducted all over the world on oral hygiene and tooth decay of 6–12 years old children; these studies have yielded differing results because of differences in time and location of the study, and social, economic, and cultural specificities of participating subjects.<sup>[4,6-8,12,17]</sup> DMFT index has turned out to be 5.9 in Saudi Arabia, 4.5 in Sudan, 3.5 in Kermanshah, and 1.9 in Ahvaz.<sup>[17-20]</sup> The total mean and standard deviation of PI and GI turned out to be  $1.39 \pm 0.30$  and  $0.86 \pm 0.15$ , respectively, in this study. According to Al-Sufyani *et al.*'s study (2014), which was conducted on 101 children with Down's syndrome, the mean and standard deviation of PI and GI turned out to be  $0.58 \pm 0.61$  and  $1.45 \pm 0.57$ , respectively; there was no statistically significant difference between two gender in their study.<sup>[21]</sup> This study examined DMFT, dmft, GI, PI, D, M, F, d, m, and f indexes of students by the type of disability in two groups of blind and deaf students; although the rate of decayed primary and permanent teeth is high in both blind and deaf students, the rate of falling, missing, and filled teeth is quite low in these students. Based on the findings of Al-Maweri *et al.*'s study (2014), which was conducted on 95 children with Down's syndrome, between 6 and 15 years old, to determine treatment needs and tooth decay of these children, 93.8% of subjects had decayed teeth and dmfs, dmft, DMFS, and DMFT indexes turned out to be 10.35, 4.44, 4.32, and 2.45, respectively; this study turned out to be highly inconsistent with this study, the reasons being different methodology, type and degree of disability, economic status of families and society, and diet and healthcare of these children. Time is an etiological factor in the field of tooth decay assessment; that is, the longer a tooth is exposed to decaying factors, the more probable it is for that tooth to get rotten; therefore, older children are more susceptible to tooth decays.<sup>[16]</sup> Mazhari *et al.*'s (2006) cross-sectional study, which was conducted on 138 children, between 6 and 12 years old, in orphanages across Mashhad, examined incidence and severity of tooth decay (using dmft/DMFT index), dental treatment needs (using UTN index), and dental health status (using GI); according to the results of this study, the mean DMFT and dmft of children with disabilities turned out to be  $1.37 \pm 1.64$  and  $3.4 \pm 2.7$ , respectively; 57.2% of studies' children had weak dental hygiene and 67% of them were suffering from moderate to severe gingivitis; DMFT, dmft, and UTN indexes of Mazhari *et al.*'s study were consistent with those of this study.<sup>[22]</sup> Based on Sargolzaei *et al.*'s study (2005) entitled "The Status of Oral Diseases and Dental Hygiene of Individuals with Mental Retardation and Physical Disabilities under the Coverage of Zahedan Welfare Organization," oral hygiene of 94 retarded subjects and 104 subjects with physical disability was examined. The results of their study showed that the mean DMFT of subjects with mental and physical disabilities was 3.2 and 3.7 for the age range of 7–14 years old, 2.7 and 3.6 for the age group of 15–25 years old, and 5.7 and 3.7 for the age group of more than 26 years old, respectively.<sup>[23]</sup>

According to the findings of Shyama *et al.*'s study (2001), which was conducted on 832 subjects with hearing and visual disabilities

in Kuwait, 24.2% of studied participants, 16.4% of whom were deaf and 25.5% of whom were blind, lacked permanent teeth; the highest rate of untreated decayed teeth, in case of deaf subjects, turned out to be 26%.<sup>[24]</sup> According to Mohandes' study (2004), which examined 117 deaf students, aged 12 years, of Tehran Exceptional Schools, DMFT rate turned out to be 3.07.<sup>[3]</sup> Despite differences in terms of time and location, studies, generally, tend to state that children with mental and physical disabilities are similar to their healthy peers regarding prevalence of dental caries and periodontal problems in low age (6 years); however, dental and oral diseases of these children increase as they get older, which might result from delayed or incorrect diagnose and the absence of dental treatments, making them vulnerable against oral complications.<sup>[25,26]</sup>

Brushing and flossing were introduced as two effective ways in preventing dental and oral diseases in this study; according to the results, 81.2% of blind students did not brush their teeth regularly and none of them used flossing. About 27% of deaf students brushed their teeth at least once during 24 hours and none flossed their teeth. Based on the results of Akpabio *et al.*'s study, students who do not brush their teeth at least once a week had the weakest oral hygiene and the highest rate of decayed teeth; the more the student brush their teeth, the less the number of dental plaque gets.<sup>[27]</sup> According to Oredugba's study (2004), 94% of deaf students brushed their teeth at least once in 24 h;<sup>[28]</sup> this rate was 51% in Mohandes' study (2004).<sup>[3]</sup> According to the findings of this study, the rate of deaf student brushing their teeth is higher than that of blind students.

## Conclusion

Based on the results of this study, the rate of decay in studies subjects was higher in primary teeth than that of permanent ones. Some of the main causes of the high rate of dental and oral diseases of these children are lack of effective instruction on caring and protective methods and the reluctance of parents in cooperating with related authorities. According to the findings, the indicators of the health status of blind and deaf children are much lower than the standards of the World Health Organization. Since hearing and visual disabilities have definitely helped the rate of oral diseases increase, it seems quite possible to prevent further complications in case of these children. Some factors which can be implemented to provide efficient preventive measures for this vulnerable group of children to decrease the rate of dental and oral diseases include training sufficient professional staff, providing helpful and educational classes for parents of these children, paying enough attention to the nutrition, and specifying certain dentistry centers equipped with modern facilities and due-time services.

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## Conflicts of interest

There are no conflicts of interest.

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