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Original Article**Oral health status of a sample of disabled population in Iran***Zahra Khanom Hashemi DDS¹, Abolghasem Hajizamani DMD, PhD²,
Elham Bozorgmehr DDS³, Fereshteh Omrani DDS⁴***Abstract**

BACKGROUND: A wide range of oral health conditions has been studied in disabled populations. Many studies showed that the oral health of individuals who were disabled was poor and their oral treatment needs were greater than those of the general population. This study aimed to determine caries experience, levels of oral hygiene, periodontal health and prevalence of malocclusion in a sample of disabled subjects.

METHODS: Five special care needs schools were randomly selected from the list of schools in Kerman and all attendants were examined for dental status on the basis of WHO criteria, gingival health and oral hygiene behaviors. Data were analyzed by ANOVA and chi-square tests.

RESULTS: There were 297 participants in the study. The most frequent group of disability was mental retard. The mean decayed, missing and filled teeth (DMFT) score was 5.14. Ninety percent of subjects had gingival inflammation. There was no significant ($P = 0.34$) difference between caries experiences of different disabled groups.

CONCLUSIONS: Oral hygiene of disabled groups was poor and their caries experience rate was very high. Special oral health care program for them is recommended.

KEY WORDS: Special care, oral health, oral hygiene, disability.

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Oral health is a vital component of overall health, which contributes to each individual's well-being and quality of life by positively affecting physical and mental well-being, appearance, and interpersonal relations. Oral health is an important aspect of health for all children, and is more important for children with special health needs. People with disabilities deserve the same opportunities for oral health and hygiene as those who are healthy. Unfortunately, oral health care is of the greatest underserved health needs of the disabled people.¹ Inadequate dental care or poor dental public health measurements may have negative influence on their oral health status.²

The American Academy of Pediatric Dentistry defines individuals with special health

care needs (SHCN) as those with "any physical, developmental, mental, sensory, behavioral, cognitive, or emotional impairment or limiting condition that requires medical management, health care intervention, and/or use of specialized services or programs. Patients with SHCN are at increased risk for oral disease.³ According to US Surgeon General's report, dental caries is the most common infectious disease of childhood.³

Dental caries is also the major cause of tooth loss in individuals with physical and mental disabilities. Several studies have noted that disabled subjects have higher levels of caries, lower levels of care and a much higher proportion of untreated lesions but receive less treatment than the normal population.^{4,5} Epidemiology

¹ Resident, Department of Pediatric Dentistry, School of Dentistry, Kerman University of Medical Sciences, Kerman, Iran.

² Assistant Professor, Kerman Oral and Dental Diseases Research Center, Department of Dental Public Health, School of Dentistry, Kerman University of Medical Sciences, Kerman, Iran.

³ PhD Student, Department of Dental Public Health, School of Dentistry, Kerman University of Medical Sciences, Kerman, Iran.

⁴ Department of Dental Public Health, School of Dentistry, Kerman University of Medical Sciences, Kerman, Iran.

Correspondence to: Abolghasem Hajizamani DMD, PhD.

Email: a_hajizamani@kmu.ac.ir

logical studies reported that children with disabilities tended to have poorer oral hygiene and a greater prevalence and increased severity of periodontal disease than their normal counterparts.^{6,7}

Some parents and health centers have supposed children with SHCN to take the responsibility for their oral hygiene, but the results are usually poor. Although independent brushing is not contraindicated, but staff should be aware that without their follow-up, unsupervised oral hygiene procedures in SHCN children can have serious dental consequences.

Because of the insufficient or sometimes complete dysfunction of their stomatognathic apparatus, often due to anatomical malformations of the oral cavity and facial region and children's uncooperative behavior, accomplishment of good oral hygiene measurements usually implies the assistance of parents or caretakers.⁸

Some studies have reported oral health status of disabled people in Iran.^{9,10} On the basis of these reports there are many unmet dental needs in disable population which need more attention. Therefore, this study aimed to determine caries experience, levels of oral hygiene, periodontal health and prevalence of malocclusion in a sample of disabled subjects attending special needs schools in Kerman, Iran.

Methods

This cross-sectional study was carried out on a random sample of special need centers including 3 special need schools and 2 special need care home. The target population included all physically handicapped, sensory disabled (except visual group) and mental retarded group in 5 special needs centers in Kerman, Iran. A few numbers of Down syndrome subjects were also included in the study.

The survey was a part of annual examination of special needs schools which is performing by Dental Public Health department of Kerman Dental School. The department has an agreement with local authority of education for screening and preventive oral health program in Kerman and the families were aware of the program.

Examination was carried out by two dentists (weighted kappa = 80%) and two recorders who were trained and calibrated with basic WHO Oral Health survey methods.¹¹ Dental exam was performed at school under natural light with disposable mirror and a WHO probe which was used for plaque removal from tooth surfaces. Assistant was sought in case of uncooperative subjects from a school staff. Gingiva was observed for any sign of inflammation or bleeding. Oral hygiene behaviors were recorded if the subject could answer to the relevant questions. The whole mouth and teeth were observed for any sign of abnormality or diseases.

Data were analyzed using the statistical software SPSS version 17.5. Decayed, missing and filled teeth (DMFT) score was compared among the group after age standardization. One way ANOVA was used to test the differences in the mean scores of DMFT among age groups and also type of disability. Chi-square was used to test association between DMFT categories and disability condition.

Results

During two months, 277 subjects (90 male and 187 female) with age range of 7-45 years old were examined. The mean age (\pm SD) was 14.7 ± 7 years. About 90% of participants were below 25 years old with a mode of 13 years old.

Figure 1 shows the rate of study subjects with different disabilities. The most frequent group was mental retards who had a wide range in their disability. Table 1 shows the frequency distribution of oral hygiene habits among study subjects. There were many missing data from respondents for this section.

About 96% of subjects had moderate to heavy plaque accumulation on their teeth and sign of gingival inflammation. Sixty five percent of survey subjects had some degree of malocclusion.

DMFT data analyzed only for 237 subjects, the mean DMFT score was 5.14 ± 3.25 and D (Decay) component had the greatest value. Ninety percent of subjects had DMFT score less than 10 with mode of 2 score. Table 2 shows the distributions of DMFT scores by disability and

for each age group. There was a significant difference between male and female participants for mean DMFT ($P = 0.007$).

ANOVA analysis did not show any significant difference among disabled groups and also different age groups in terms of mean DMFT.

Chi-square test also did not show any association between type of disability and DMFT categories when were tested for their age categories. The difference was tested with adjusted regression analysis for assurance and no difference was observed.

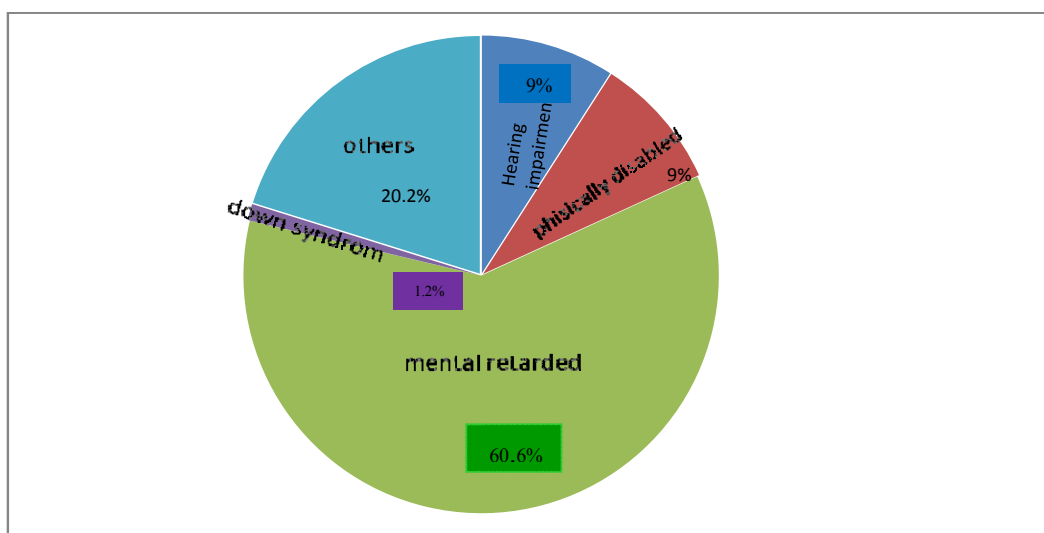


Figure 1. The proportion of type of disability in study subjects

Table 1. The frequency distribution of oral hygiene habits among the study subjects

	Never	Two time or less per week	Every other day	Once per day	Twice or more per day	Missing data	Total
Brushing teeth	31(11.2%)	16(6.9%)	20(7.9%)	99(37.7%)	31(11.2)	77(27.8%)	277(100%)
Flossing teeth	179(64.9%)	7(25%)	3(1.1%)	6(2.2%)	2(0.7%)	80(28.9%)	277(100%)
Using mouth wash	180(65%)	13(4.7%)	1(0.4%)	3(1.1%)	-	80(28.9%)	277(100%)
Dental visit	Never	In case of problem		Regular visit	Missing	Total	
	97(35%)	94(33.9%)		3(1%)	83(30%)	277(100%)	
Snack consumption	low	medium	high		missing	total	
	89(32.1)	30(10.8%)	28(10.1%)		83(30%)	277(100%)	

Table 2. Distribution of DMFT scores by age groups and type of disability

DMFT score	N	Minimum	Maximum	Mean ±SD	P value (Sig)
Age group					
≤9 years(DMFT)	53	1	19	5.43 ± 3.4	0.23
<15 years	146	1	19	4.89 ± 3.28	
16- 25 years	62	1	14	5.34 ± 3.20	
26-35 years	22	1	12	6.36 ± 3.21	
> 35 years	4	1	10	5.75 ± 3.77	
Type of disability					
Hearing impairment	21	2	9	4.95 ± 2.10	0.34
Physically disable	21	1	12	4.67 ± 3.18	
Mental retard	143	1	19	5.26 ± 3.49	
Down syndrome	3	5	12	8.67 ± 3.51	
Others	50	1	12	4.88 ± 2.93	

Discussion

The study was the first oral health survey of disabled population which included majority of special needs schools in Kerman. This survey reinforces information about differences in prevalence of oral disease between disabled and normal children. The average DMFT of 9 years old children was reported 2.9 in Kerman on the basis of National Oral Survey in 2003 and it was 5.43 in <=9 years old group of studied subjects.¹² According to the previous studies; individuals with any kind of disability had poor oral health compared with the general population.¹³

Current study reported a high prevalence of DMFT (mean 5.14) in disabled people with greater value of D component, thus agreeing with previous studies.^{14,15} Mean DMFT of mental retarded group children in Tehran was reported as 4.83 at age of 14- 20 years.⁹

Despite high level of caries, the treatment received was very low as the study subjects' sealed teeth were recorded zero and filled teeth comprised just for a few patients (n = 24) with mean of 3.18. Forty percent of study subjects had DMFT score more than 5 which implies high caries level of WHO categories for DMFT.

However, there was no significant difference among disabled groups for DMFT scores categories, these findings confirmed previous studies,¹⁶ but mental retarded group had a higher rate for greater score. In some earlier studies, the highest caries experience was also observed in this group.¹⁷⁻²⁰ This might be due to wide range of handicapping and learning disabilities among the group.

Hearing impairment group had a better condition among the study groups with less than 10 DMFT and it confirms the similar findings in Mashhad.¹⁰ It could reflect the role of their educators (teachers and parents), because they could communicate better with these children than mental retarded groups in some ways. However, the finding was in contrast of a study among a Greek disabled population which reported more caries experiences in deaf population.²¹

A significant difference was found between genders in caries experience which was in con-

trast to the most previous reported studies.^{16,17,22} This disagreement might be related to age of survey subjects of those studies. Poor gingival health and presence of plaque in 96% of subjects could be an alarm for more oral health problem among disadvantage people such as special need schools attendants. Therefore, oral health promotion program should be favorable. A study on a large population (1621 disabled children in Mashhad) which carried out by Ajami et al. reported, the proportion of disabled children who requiring periodontal treatment was very high (74%) and the major needs were prophylaxis plus oral hygiene advice.¹⁰

Oral hygiene habits of subjects in current study were very poor as it was observed that only 11% brushed their teeth twice per day, 90% never used dental floss and even not visited a dentist. As poor oral hygiene is a strong risk factor for caries and it has been documented that persons with handicapping conditions have poor oral hygiene, it could put them at more risk for diseases especially carious teeth.^{10,23,24}

Dental education program for parents/guardians/caregivers is important to ensure children with SHCN do not jeopardize their overall health by neglecting their oral health. The parents (or the guardian) are initially responsible for establishing good oral hygiene at home. Reinforcement of good home dental care should be provided through mass media (e.g., newspapers, radio, television and internet), communication with other people, and school activities (e.g., health classes and parent-teacher association meetings). This supplementary support could relieve the dentist having sole responsibility for explaining the need for home dental care and reinforce the receptivity of the parent and child to such a program.

Close observation of caries in susceptible patients and regular dental examinations are important in the treatment of patients with SHCN; however, 90% of the study subjects never visited a dentist. They must have semiannually dental visit for professional prophylaxis, examination, and topical fluoride application, and certain patients can benefit from recall examinations every 2, 3, or 4 months.⁸

The high proportion of malocclusion in disabled subjects comparing normal population was consistent with results of previous studies.²⁵⁻²⁷ Malocclusion can complicate the child's disability, resulting in dental trauma (e.g. a large overjet predisposes the children to trauma in those with seizures), periodontal disease (promoted by crowding or eruption problems), functional problems (mastication, drooling), speech impairment and even temporomandibular joint dysfunction.^{28,29}

However, 60% of respondents use an average amount of snacks during the day but it could make them susceptible to more carious teeth. Therefore, a proper non-cariogenic diet is essential to a good preventive program for a child with SHCN. The oral side effects of their medications should be reviewed with the parents or guardians at each visit to identify specific concerns, for example, of increased caries or gingival overgrowth, to prevent or minimize these problems.

One of the important limitation of oral health survey among this population was missing a lot of data (up to 30%), because most of them cannot respond to questions properly and also due to their health condition, oral health was not in priority of families or school health program.

We should consider disabled child patients as children with special needs with physical

and/or mental disabilities. Such children may have more marked oral pathologies, either because of their actual disability or for other reasons of a medical, economical or social nature, or even because their parents find it very difficult to carry out proper oral hygiene. In addition, they may have special characteristics making it necessary, when providing dental care, to apply physical restriction techniques or even a general anesthesia.³⁰

Conclusion

Oral health in disabled school population was poor and majority of the people need specific dental care. The level of oral hygiene was very poor and prevalence of gingival disease was greater than normal groups. Therefore, oral health education program considering their disability by parents and school staffs are necessary. The unmet treatment needs of this population could be a reason for a shortage in ability of dental care provider and services to provide treatment up to at least the same level as normal people for these groups. Therefore, improvement of education programs in general dentistry and residency should be recommended.

Conflict of Interest

Authors have no Conflict of Interest.

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