Periodontal Treatment Needs Amongst 9-14 Year-old Institutionalized Mentally Retarded Children in Mashhad, IRAN

Nematollahi H. a*, Makarem A. b, Noghani AR. c

a Dept. of Pediatric Dentistry, Faculty of Dentistry, Dental Research Center, Mashhad University of Medical Sciences, Mashhad, Iran. 
b Dept. of Pediatric Dentistry, Faculty of Dentistry, Dental Research Center, Mashhad University of Medical Sciences, Mashhad, Iran. 
c Pediatric Dentist, Mashhad, Iran.

KEY WORDS
CPITN; Mentally retarded; Institutionalized; Children

ABSTRACT

Statement of Problem: Periodontal problems seem to be more common in mentally retarded children due to the poorer oral hygiene than in mentally healthy children, but no data are available on periodontal treatment needs in these children in Mashhad.

Purpose: The purpose of this study was to determine periodontal treatment needs of the mentally retarded children in Mashhad, Iran, using the Community Periodontal Index for Treatment Needs.

Materials and Method: In this descriptive cross-sectional study, 258 mentally retarded children aged 9-14 years consisting of 38 educable, 95 trainable and 125 profound children residing in governmental and private centers in the city of Mashhad, Iran were assessed for Community Periodontal Index for Treatment Needs (CPITN). For analyzing the results of the study, T-test and analysis of variance (ANOVA) were used. The level of significance was set at \( p < 0.05 \).

Results: Statistical analysis revealed that the mean CPITN among different age groups was 1.34±0.49. The mean CPITN increased with age (\( p =0.01 \)) and with the level of mental retardation (\( p = 0.001 \)). The treatments needed for most of the children were oral hygiene instruction (74.42%), followed by scaling (23.64%), and extensive periodontal treatments (1.16%). Only, 0.78% of the population demonstrated healthy periodontal tissue. Mean CPITN was significantly higher in governmental centers than private ones (\( p =0.02 \)).

Conclusion: It was concluded that the periodontal treatment needs (oral hygiene instruction) of the mentally retarded children was high in Mashhad.

* Corresponding author: Nematollahi H. Address: Dept. of Pediatric Dentistry, Faculty of Dentistry, Mashhad University of Medical Sciences, Mashhad, Iran; Tel: 0511-8829501-9; E-mail: nematollahih@mums.ac.ir

Introduction

Mental retardation is a disorder characterized by low scores on tests of mental ability, limited ability in aspects of daily living and significantly below-average social and communication skills. Mental retardation is one of the most frequently encountered and most distressing disabilities among children in industrialized and developing countries [1]. Several studies have reported the dental health of the mentally retarded individuals [2]. These patients have a lower level of oral
hygiene; thus, periodontal problems are more common in them [3-7]. It is common to find poor dental hygiene with high levels of dental plaque, calculus and gingivitis in early age, intense halitosis and food remnants between the teeth and more consumption of cariogenic and soft diet in these patients [6]. Prolonged retention of food particles in the oral cavity might result in a higher incidence of dental caries and gingival inflammation [3].

Due to a lesser stress tolerance of these patients, some problems are almost invariably present when taking dental management. In any case, treatments could and should be carried out, taking some special measures for controlling behavioral problems, such as general anesthetia or deep intravenous sedation [6].

Bamjee, Chikte and Cleaton et al. examined a total of 213 handicapped boys and girls in Johannesburg. They found that the vast majority of them required removal of supra- and subgingival calculus [5]. Johnson, Seymour and Greeley et al. as well as other investigators reported that the type of disability had a significant effect on the periodontal problems observed. Children with mental retardation had the poorest levels of oral hygiene and the greatest periodontal treatment needs [8-13]. Furthermore, Svatum and Gjermo found that increased age and a high degree of mental deficiency are the factors that apparently contributed to the impairment of periodontal health and increased treatment needs [14]. In order to provide effective periodontal care for mentally retarded children, it is essential to ascertain treatment needs, so that decisions can be made based on improving care. Yet, few reports have been published regarding periodontal treatment needs of mentally retarded children in Iran.

The objectives of the present study were to determine the periodontal treatment needs of 9-14 year mentally retarded children in the city of Mashhad, Iran and investigate the association between their periodontal health status, treatment needs and level of mental retardation.

Materials and Method
In this descriptive cross-sectional study, the periodontal treatment needs were assessed in all mentally retarded children aged 9-14 years (mean 9.96±3.71), residing in governmental and private centers in Mashhad. 266 children were in the study group and 258 of them (140 male and 118 female) had fully erupted index teeth which could be assessed adequately. The intelligent quotient (IQ) of children in these centers ranged between "20-70". This IQ had been determined prior to placing the children in these centers. The Revised Stanford Binet Intelligence Test was used to assess the IQ. An IQ of 52-67 was indicative of mild mental retardation (Educable mentally retarded) 36-51 indicated moderate (Trainable mentally retarded), and 35 and below were considered as severe mental retardation (profound mentally retarded). In this study from 258 children, 38 were in the educable group, 95 in the trainable group, and 125 were in the profound group.

This study was approved by ethics committee of Mashhad University of Medical Sciences. All the examinations were conducted under the same conditions for all the subjects in a dental chair by a single examiner to avoid inter-examiner bias. The criteria and method of assessment for periodontal disease was the community periodontal index for treatment need (CPITN). The data were recorded for sextants as was recommended by the FDI-WHO Joint Working Group [15]. A dental mirror and a CPITN probe, type WHO-1978, spherical in shape, were used to determine the bleeding response, the probing depth and the presence of calculus [16]. Six segments were assessed for each individual. Pockets' depths were measured at six sites around each tooth (mesial, middle, and distal on both vestibular and lingual/palatal surfaces). The specified index teeth were 16, 11, 26 and 36, 31, 46. The subjects were classified into different treatment need categories according to the highest scores which were recorded during the examination, as was recommended (Table 1).

Statistical analysis of the data was carried out, using the SPSS version 10.5. To check the hypothesis,
controlling tests of the inductive statistics, such as T
student test and one-way analysis of variance
(ANOVA) were applied. The level of significance was
set at \( p < 0.05 \).

**Results**

As shown in Table 2, mean CPITN among different
age groups of children was 1.34±0.49 which increased
with age \( ( p = 0.01) \). Table 3 demonstrates the distrib-
ution of patients according to their periodontal treat-
ment needs in relation to gender. No significant differ-
ence was found in the type of periodontal treatment
needs in terms of gender. In the present study, only 2
patients \( (0.78\%) \) had no signs of periodontal disease
(code 0); 192 \( (74.42\%) \) presented gingival bleeding
after gentle probing \( (code \ 1) \) which required just oral
hygiene instruction; 61 \( (23.64\%) \) had supra- or subgi-
ngival calculus \( (code 2) \) or pathologic pocket 4-5mm
\( (code 3) \) which required removal of supra- or subg-
ngival calculus, and 3 \( (1.16\%) \) had deep pathologic poc-
ket more than 6 mm \( (code 4) \) which required complex
periodontal treatment.

<table>
<thead>
<tr>
<th>Table 3</th>
<th>Distribution of patients according to their periodontal treatment needs and sex</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment Need</td>
<td>Male</td>
</tr>
<tr>
<td>-------------</td>
<td>--------</td>
</tr>
<tr>
<td>TN 0</td>
<td>1</td>
</tr>
<tr>
<td>TN 1</td>
<td>110</td>
</tr>
<tr>
<td>TN 2</td>
<td>27</td>
</tr>
<tr>
<td>TN 3</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>140</td>
</tr>
</tbody>
</table>

Results of Chi-square Test \( X^2 = 3.05 \) \( p = 0.38 \)

72.9\% of the patients resided in governmental centers. The results showed that the mean CPITN was significantly higher in governmental centers \( (1.37\pm0.52) \) than private ones \( (1.25\pm0.41) \). This difference was statistically significant \( ( p =0.02) \). Furthermore, 43.7\% of the patients residing in the govern-mental centers and 25.6\% of those in private institutes needed scaling and surgery.

<table>
<thead>
<tr>
<th>Table 4</th>
<th>Comparison of mean CPITN according to mental retardation level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mental Retardation Level</td>
<td>n</td>
</tr>
<tr>
<td>Educable</td>
<td>38</td>
</tr>
<tr>
<td>Trainable</td>
<td>95</td>
</tr>
<tr>
<td>Profound</td>
<td>125</td>
</tr>
<tr>
<td>Total</td>
<td>258</td>
</tr>
</tbody>
</table>

Result of ANOVA test : \( F = 19.32\), D.F = 2, \( p = 0.001 \)

**Discussion**

Providing dental treatment for a person with mental
disability requires adjusting to social, intellectual and
emotional delays. Short attention span, restlessness,
hyperactivity and erratic emotional behavior may
characterize the children with mental retardation undergoing dental treatment [17].

Due to limitations in patients’ cooperation in this study, meticulous periodontal examinations were difficult; nevertheless, bleeding response, probing depth and presence or absence of calculus were carefully recorded.

The proportion of children requiring periodontal treatment in this study was very high. The most prevalent treatment need was oral hygiene instruction (TN1), followed by plaque control and scaling (TN2). The need for complex periodontal treatment (TN3) was required by a small percentage of cases (1.16%). Comparison of the results of this study with those obtained by Bamjee et al. [5] indicated that periodontal treatment needs fall mainly into the TN1 category. Furthermore, Bhasar and Damle examined a total of 593 handicapped children in the age group of 12-14 years in Bombay. They found that the bleeding and calculus components were higher than the healthy components in all the groups and almost all the children required treatment in the form of deep scaling and/or prophylaxis and oral hygiene instructions [18]. This means the intervention of dental hygienists is required for improving the oral hygiene of mentally retarded children. The mechanical removal of the dental plaque is of primary importance for maintaining periodontal health. However, mentally handicapped people are unable to achieve adequate level of plaque control, because of their physical and mental limitations. The most obvious reason for poor oral hygiene in a mentally retarded child is the physical inability to clean the oral cavity adequately; another reason is lack of self-discipline because of overprotective parents.

The prevalence of poor gingival health in the subjects of this study is similar to the findings of previous studies [3-5, 19-22]. Retention of food particles in the oral cavity due to lack of normal masticatory function is more prevalent in the mentally retarded children, leading to periodontal disease. Mentally retarded children should have access to dental care preventive procedures under the same conditions like the rest of the population. But unfortunately, they have difficulty receiving the same health services as other healthy children in the developing societies including Iran. This justifies planning and coordination efforts to take care of them in the dental care preventive procedures. The results also indicate that the periodontal problem becomes even worse with increasing age. Calculus is significantly more prevalent in mentally retarded children and increases with age which correlates with increasing levels of gingival inflammation. This finding is in concordance with the results of other investigators [23-24]. In the present study, the mean CPITN increased with level of mental retardation (p <0.001). There seems to be a correlation between the poor oral hygiene and the severity of the mental retardation. This finding is in the same line with the results from previous investigations [8-12, 25]. Individuals with mental retardation may be reluctant to seek health services because they are frightened of new surroundings and treatment procedures particularly dental visits. Premeditation, sedation, use of physical or medical restraints, general anesthesia, and hospital operating room procedures may be necessary for behavioral management difficulties. It was also found in this study that there were significantly poorer levels of oral hygiene and a greater prevalence of periodontal problem in the mentally retarded children living in governmental centers than those in private ones. Advanced training is needed for the staff of governmental institution to enhance their oral health.

**Conclusion**

The results of this study indicated that the periodontal treatment needs (oral hygiene instruction) in the mentally retarded children were high which increased with age and severity of mental retardation. It is evident that early intervention with oral motor training and frequent regular preventive program for the mentally retarded children will reduce periodontal disease and
the need for treatment under general anesthesia in the future.

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References


