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Research Article

DENTAL ANOMALIES AND ORAL HYGIENE STATUS IN MENTALLY RETARDED CHILDREN

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ABSTRACT

Objective: Mental retardation is a condition in which there is a deficiency in all development of motor, cognitive, social, emotional, chronic medical conditions, and language functions. This is the most common form of developmental disability. It is related to nervous system function. Many people with mental retardation also suffer from other disabilities such as cerebral palsy, seizure, or psychiatric disorders, attention disorders, hyperactivity, visual abnormalities, communication inability, and difficulty in mastication and deglutition. Oral hygiene of these mentally compromised children is not the same as it is found in the normal healthy individual. The mentally challenged children maintain a poor oral hygiene, and thus, they are prone to various oral diseases and anomalies, which require diagnosis and treatment. Adequate oral cleaning in these mentally compromised children is a difficult task due to their improper musculature. They have a high risk of incidence of periodontal disease, malocclusion, drooling of saliva, macroglossia, fissured tongue, and high arched palate.

Methods: This study was conducted among 67 patients who fall under the age group of 12-20 years.

Results: The clinical findings were significant including a higher prevalence of malocclusion, fissured tongue, high arched palate, drooling of saliva, angular chelitis, and fractured tooth.

Conclusion: This study was carried out among the mentally challenged children to know their oral hygiene status and dental anomalies with an idea of guiding them to have a good oral hygiene status and treat the developed dental changes.

Keywords: Mental retardation, Poor oral hygiene, Dental anomalies, Malocclusion, Fissured tongue

INTRODUCTION

Normal facial morphology and its components are essential for esthetics of the craniofacial complex [1]. Oral and dental anomalies have more prevalence in mentally challenged, leading to abnormal functioning of the stomatognathic complex [2]. Down's syndrome and cerebral palsy are the most frequently caused and recognized developmental anomalies. A patients with down's syndrome often show mental retardation and are affected with related medical conditions such as cardiovascular anomalies, musculoskeletal defects, and immune response deficiency [3]. Thepatients who are affected by cerebral palsy have limited movements, which lead to the activity limitations. They also suffer from disturbances of sensation, visual perception defects, communication disability, and few more. It is essential for a dentist to be familiar with the stomatognathic complex of these special children's. These special children are unaware of the normal oral hygiene maintenance aids to which various dental diseases are caused. They also have difficulty in understanding the benefits of dental procedures and their treatment plan [4]. In India, there is only a little data available relating to dental health in mentally challenged [5]. Hence, as a dentist we have to create an awareness among the mentally challenged society and have to impart and educate the parents of these special children for the maintenance of good oral status and to take proper preventive measures for any oral diseases. The principle aim of this study is to know the various dental anomalies and the oral hygiene status of the mentally challenged children.

METHODS

This study was carried out through proper channel after getting Ethical Approval from Department of Research, Saveetha Dental College and Hospitals, Saveetha University and permission from Bala Vihar Special School, Kilpauk, Chennai. Totally, 67 patients were seen among the age group of 12-20 years. Past medical history and relevant information were obtained from individual files of these special children. The special children who were present in the school during the day of this study were subjected to clinical examination. The mentally challenged children who were uncooperative suffering from severe systemic disorders such as cardiac defect and unknown etiology for mental disability were excluded from the study. Demographic informations such as age, gender, and education were recorded in a proforma in prior to clinical examination. The dental examination was carried out in the special school by two examiners using a mouth mirror, Williams probe, high intensity lighting, and universal infection control procedures. The mouth mirror and the Williams probe used were of the disposable type. A single set of armamentarium was used for each patient, and it was disposed after the clinical examination. The special children were examined using positive reinforcement and for the examination of each patient, approximately 10 minutes was taken with the assistance of a dental nurse for patient management. Radiographs were not involved during the clinical examinations. The dental anomalies and the oral hygiene status of these mentally challenged children were assessed. Soft tissue findings and skeletal deformities were majorly assessed, and the data were collected. The recorded data were then statistically analyzed.

RESULTS

All the mentally challenged children had one or the other dental anomalies. The dental anomaly findings include malocclusion, fissured tongue, angular chelitis, drooling of saliva, fractured tooth, gingivitis, periodontitis, high arched palate, abnormal temporomandibular joint (TMJ), fordyce's granules, macroglossia, amelogenesis imperfecta, bald tongue, and tonsillitis.

Statistical analysis was made using Z-test and the results were obtained. There was a significant difference between each of the dental anomalies seen in these special children. The skeletal deformities

assessed during the clinical examination did not provide a significant result. Among the clinic findings of these children, comparisons were made between two or more anomalies based on their prevalence of occurrence. Fig. 1 represents a comparison made among fissured tongue, macroglossia, and bald tongue. In this examination, fissured tongue was seen prominently when compared with macroglossia and bald tongue. Fissured Tongue was seen among 26.9% of the examined subjects, whereas macroglossia was seen in 6.0% of the sample subjects and bald tongue in 1.5% of the sample subjects. Fig. 2 represents a comparison made between periodontitis and gingivitis. Gingivitis was prevalently seen among 14.9% of the sample subjects while periodontitis was seen among 11.9% of the sample individuals. Fig. 3 represents a comparison made among abnormal TMJ, malocclusion, high arched palate, amelogenesis imperfecta, and fractured tooth. Among this comparison, malocclusion had an increased incidence and was found in 26.9% of the sample subjects. High arched palate was seen in 23.9% of the individuals while fractured tooth was seen among 20.9% of the individuals. Amelogenesis imperfecta and abnormal TMJ were found on a lower scale during the clinical examination. About 3.0% of the individuals had abnormal TMJ movements, and 3.0% of the individuals had Amelogenesis Imperfecta. Fig. 4 represents a comparison made among angular chelitis, drooling of saliva, fordyce's granules, and tonsillitis. Angular chelitis and drooling of saliva had an equal prevalence in this comparison and was seen in 23.9% of the sample subjects. Among these special children, 7.5% had fordyce's granules while 1.5% of them had Tonsillitis.

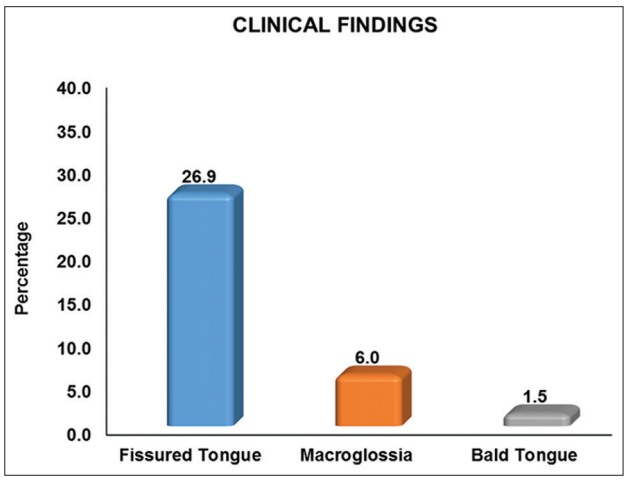

Fig. 1: A comparison among fissured tongue, macroglossia, and bald tongue

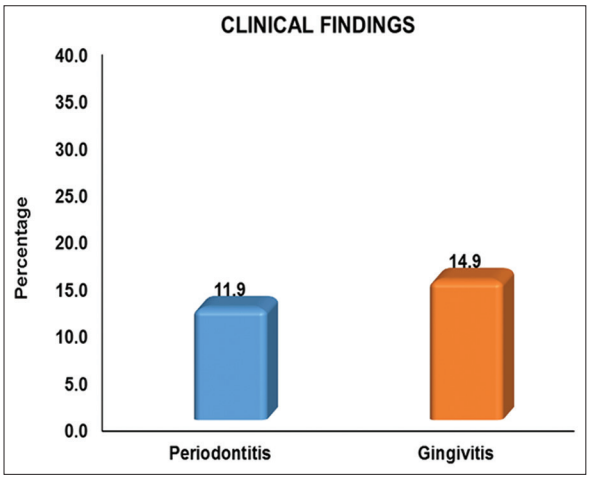

Fig. 2: A comparison between periodontitis and gingivitis

DISCUSSION

An individual's skill, motivation, and dedication play an active role in the maintenance of good oral hygiene status [6]. Though there is a large volume of literature available on the oral hygiene status of the mentally challenged children, a small research has been conducted to identify various clinical findings in the oral hygiene of the mentally challenged subjects. Several studies of oral disease prevalence in mentally challenged children significantly prove that they have poor oral hygiene status [2,7-15], and this study also confirms the same concept. Brown and Schodel have reported that these especially challenged patients maintain a poor oral hygiene than their non-disabled counterpart, by reviewing 32 studies regarding the specially challenged patients. The major reason assumed for the prevalence of poor oral hygiene status in the mentally challenged children is due to lack of concentration and motor skills [16]. Sogi and Bhaskhar conducted a study in Davangere, Karnataka, India. They conducted a study among 13-14 years of age and the result of their study was the oral hygiene status of the mentally challenged children was poor with the OHI-S of those children found to be <2 [17]. In medically compromised children, there were variations in their oral hygiene status. Asthmatic children had abundant deposits of calculus when compared with the healthy individuals and may be possibly related with increased calcium and phosphorous level which is seen in the submaxillary and the parotid saliva [18]. In these asthmatic children, the salivary secretion level

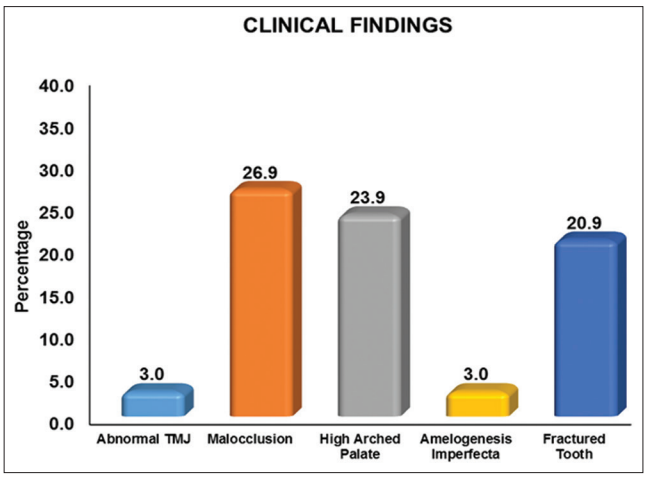

Fig. 3: A comparison among abnormal temporomandibular joint, Malocclusion, high arched palate, amelogenesis imperfect, and fractured tooth

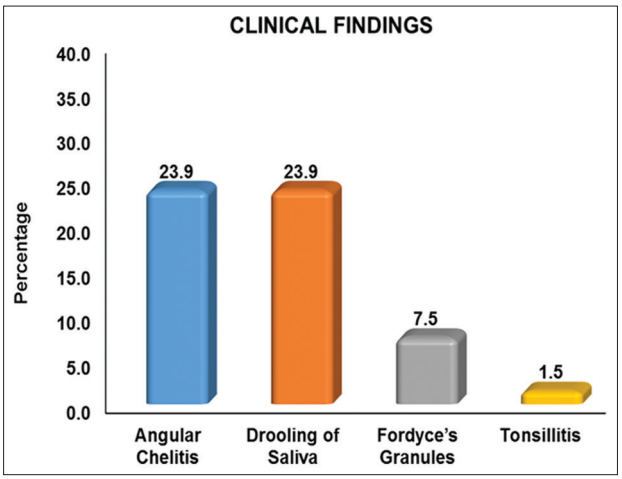

Fig. 4: A comparison among angular chelitis, drooling of saliva, fordyce's granules, and tonsillitis

tends to be decreased [19]. Down's syndrome, which is also known as trisomy 21 is a chromosomal disorder. It is caused due to presence of all or a part of third copy chromosome 21 [20]. Luiz Cesaz said that oral anomalies involved in down's syndrome include fissured tongue, high arched palate, abnormal TMJ movements [21], and these are significant in the current study. Fissured tongue was seen in 26.9% of the individuals while the high arched palate was seen in 23.9% of the individuals. Cerebral palsy, which is seen in early childhood, is a group of permanent movement disorders involving poor muscle coordination, stiff muscle, weak muscles, and inability to speak. Based on Tondon study, excessive drooling of saliva, root, or crown fracture, and abnormal TMJ movements are more prevalent oral anomalies of the cerebral palsy patients [22]. Drooling of saliva was seen in 23.9% of the subjects, the fractured tooth was seen in 20.9% of the subjects while the abnormal TMJ was found to be 3.0%. Patel *et al.* [23] and Tondon [22] showed 44.3% and 60% malocclusion in mentally challenged children, respectively. Retardation of the growth of the maxilla and mandible and they are placed anteriorly to the cranial base leads to malocclusion. Malocclusion was present in 26.9% of the individuals. The public dental funding should provide more importance for the maintenance of the dental hygiene status for those with mental inabilities. Lack of trained dental professionals to treat these special children, a specialist care, or general anesthesia for performing complex treatments, inadequate resources, and fundings maybe some of the reasons for the poorly maintained oral health of the mentally challenged children [24]. Studies say that caries more prevalently found in those children who are educated in the special schools when compared with national oral health surveys of children in normal schools [25,26].

Tannenbaum in his study said that the occurrence of dental caries was comparatively less frequent in down's syndrome patients when compared with other mentally challenged patients or with that of healthy individuals [27]. The periodontal health was also to be poor in these special children. Periodontitis was seen in 11.9% of the sample while gingivitis was seen in 14.9% of the examined sample. These clinical finding results relate with other studies, which is concerned with the poor level of oral hygiene and increased the prevalence of periodontal disease of the mentally challenged children [14,28-30]. Poor oral hygiene may act as a risk factor for several periodontal diseases, and it is evidently shown in several studies. There is a close relation among the development and the progression of different periodontal diseases and poor oral hygiene status which is well established [31]. Nicolaci and Tesini proposed that among the mentally challenged population there is a high frequency of poor oral hygiene status. They also provide a correlation between severity of handicap and various level of oral hygiene. They also explain improper oral hygiene is the main cause of the occurrence of periodontal disease in the mentally challenged patients. There is gingival inflammation, which may lead to various periodontal diseases, which is caused due to the accumulation of the food particles for a prolonged period of time [8,13,32].

From this study, in order to maintain the oral hygiene of the mentally challenged children few points have to be considered.

- Various campaigns should be launched so that there is a dental awareness created among the population. This will lead to a significant decrease in the level of occurrence of dental problems among mentally specialized children and also among healthy individuals
- These special children should be provided with an easy access over the general dental care and pediatric dental care, and the patients who are involved in high risk must be diagnosed and treated as early as possible
- All the three fields - the dental care, the medical care, and the social services should join and progress in their nature of work together which will be a greater benefit for the mentally challenged children
- Apart from them physiotherapist also will play a major role to teach these mentally challenged children the coordinated movements to carry out their day to day activities pertaining not only to oral hygiene but also for other systems
- In the dental care of the mentally retarded children only well-trained dental professionals should be utilized. They should be able to provide instructions to maintain proper oral hygiene status and should be able to do simple dental treatments under the guidance and the treatment plan designed by a dentist
- Preventive measures should be taken in maintaining the oral hygiene. This can be done by repeated dental visits to the various special schools, periodically
- The dental schools and the dental colleges should educate the budding professionals about the risk factors involved and the instructions to maintain a proper oral hygiene status in the mentally compromised children
- The general dental funds should be increased so that, it can be used in a beneficial way by treating these special children who are suffering from various complicated oral diseases.

CONCLUSION

Based on this study conducted among 67 mentally compromised patients, these special children need a proper assistance for maintaining their oral hygiene in a better manner. Dental diseases should be diagnosed at the early stage, and proper treatment plan should be made. If the oral hygiene is left without any care and any diagnosis, it may result as a high-risk factor for various systemic diseases. Awareness about the oral hygiene must be created among the mentally compromised children, their parents or guardians, authorities of the special schools, and generally in the society.

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