

## ORIGINAL ARTICLE

# ASSESSMENT OF VARIOUS DENTAL TREATMENT MODALITIES IN PAEDIATRIC PATIENTS WITH SPECIAL HEALTH CARE NEEDS: A COMPARATIVE STUDY

Shazia Shafat Shah

Pedodontist, Private practitioner

### ABSTRACT:

**Background:** Branch of dentistry which deals with oral health care problems of infants, children and young adults is paediatric dentistry. Oral and dental treatment and management of children with special health care needs also comes under this speciality. Hence; we planned this retrospective study to assess the various treatment modalities under general anaesthesia in paediatric patients with special health care needs undergoing dental treatment and compared it between healthy patients.

**Materials & methods:** The present study was conducted in the dental wing and included assessment of all the paediatric patients that underwent dental treatment from 2014 to 2015. Patients were divided into three age groups according to patient records: 4-7, 8-13, and 14-18 years. All the patients were divided into 2 study groups. Group 1 consisted of mentally healthy patients while group 2 included patients with special health care needs. Periodontal disease assessment was carried out according to community periodontal index (CPI) and using CPI probe. All the results were analyzed by SPSS software.

**Results:** Restorative treatment in group 1 and group 2 was carried in 48 and 72 patients respectively. As far as extraction is concerned, in group 1 and group 2, 33 and 55 patients underwent extractions. Significant results were obtained while comparing the number of patients in the two study groups while comparing the restorative treatment, extraction of tooth and periodontal therapy. **Conclusion:** Higher treatment modalities are required in patients of the disabled group.

**Key words:** Dental, Paediatric, Special health care needs

**Corresponding Author:** Shazia Shafat Shah, Pedodontist, Private practitioner

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## INTRODUCTION

Branch of dentistry which deals with oral health care problems of infants, children and young adults is paediatric dentistry. Oral and dental treatment and management of children with special health care needs also comes under this speciality.<sup>1, 2</sup> The majority of children can be adequately treated with, non-pharmacologic behaviour modification techniques such as the tell-show-do technique. However, some children who have extensive dental problems cannot cooperate due to a lack of psychological or emotional maturity and/or mental, physical or medical disabilities.<sup>3</sup> Studies show that the greater the disability, the worse is the child's oral health, due to the difficulty of removing plaque. A certain percentage of very young individuals, or those suffering extreme anxiety, medical impairment, and mental or physical disabilities, can only be treated under general anesthesia.<sup>4</sup> Hence; we planned this retrospective study to assess the various treatment

modalities under general anaesthesia in paediatric patients with special health care needs undergoing dental treatment and compared it between healthy patients.

## MATERIALS & METHODS

The present study was conducted in the dental wing and included assessment of all the paediatric patients that underwent dental treatment from 2014 to 2015. Ethical approval was taken from institutional ethical committee and written consent was obtained after explaining in detail the entire research protocol. Inclusion criteria for a study of the absence of organ dysfunction, patients who doesn't have any problem to general anaesthesia, intellectual disability, extreme non-cooperation, 4-18 years of age, patients who do not treated dental treatment previously. Patients with history of any other systemic illness, any known drug allergy were excluded from the present study. Patients were divided into three age

groups according to patient records: 4-7, 8-13, and 14-18 years. The decayed missing and filled teeth (dmft) and the DMFT scores for primary and permanent teeth were recorded before dental treatment under general anesthesia.

DMFT, dmft = Decayed teeth + Missing teeth + Filled teeth/ Total person

All the patients were divided into 2 study groups. Group1 consisted of mentally healthy patients while group 2 included patients with special health care needs. Periodontal disease assessment was carried out according to community periodontal index (CPI) and using CPI probe. According to these criteria, periodontal disease and dental caries were determined, and it was identified whether or not the patients were in need of treatment. When considered dmf-t and DMF-T values, decayed and filled teeth were included in the index. All the results were analyzed separately in two study groups. All the results were analyzed by SPSS software. Chi-square test was used for the assessment of level of significance.

**RESULTS**

**Table 1** shows the comparison of various treatment modalities in between group 1 and group 2 patients in between age group of 4 to 7 years. Restorative treatment in group 1 and group 2 was carried in 48 and 72 patients respectively. As far as extraction is concerned, in group 1 and group 2, 33 and 55 patients underwent extractions. Significant results were obtained while comparing the number of patients in the two study groups while comparing the restorative treatment, extraction of tooth and periodontal therapy. **Table 2 and Table 3** highlight the comparison of various treatment modalities in between group 1 and group 2 patients in between age group of 8 to 13 years and 14 to 18 years respectively.

**Table 1:** Comparison of various treatment modalities in between group 1 and group 2 patients in between age group of 4 to 7 years

Treatment modalities	Group 1 (n)	Group 2 (n)	p-values
Restorative treatment	48	72	0.02*
Fissure sealant	22	25	0.25
Extraction of tooth	33	58	0.01*
Periodontal therapy	2	5	0.04*

\*: Significant

**Table 2:** Comparison of various treatment modalities in between group 1 and group 2 patients in between age group of 8 to 13 years

Treatment modalities	Group 1 (n)	Group 2 (n)	p-values
Restorative treatment	24	40	0.01*
Fissure sealant	18	38	0.25
Extraction of tooth	25	62	0.02*
Periodontal therapy	3	5	0.65

\*: Significant

**Table 3:** Comparison of various treatment modalities in between group 1 and group 2 patients in between age group of 14 to 18 years

Treatment modalities	Group 1 (n)	Group 2 (n)	p-values
Restorative treatment	8	1	0.01*
Fissure sealant	62	10	0.01*
Extraction of tooth	110	10	0.02*
Periodontal therapy	24	11	0.22

\*: Significant

**DISCUSSION**

Mental retardation refers to subaverage general intellectual functioning which originates during the development period and is associated with impairment in adaptive behaviour. General intellectual functioning means the results obtained by administration of standardized general intelligence tests for the purpose. The significant subaverage is defined as I.Q. of 70 or below on the standardized scale of intelligence. The adaptive behaviour is defined as the degree with which the individual meets the standards of personal independence and social responsibility in relation to his age and cultural environment.<sup>5,6</sup> The deficits in adaptive behaviour may be reflected in the three areas i.e. during infancy and early childhood, during childhood and adolescence and during late adolescence and adulthood.<sup>7</sup> The management of the behavior of mentally challenged adults when providing required dental care is often a problem, whether in the dental office or in a hospital setting.<sup>8-10</sup> Hence; we planned this retrospective study to assess the various treatment modalities under general anaesthesia in paediatric patients with special health care needs undergoing dental treatment and compared it between healthy patients.

In the present study, we observed that while considering tooth extractions and restorative treatments, statistically, dental therapies are applied to individuals with intellectual disability more often than to healthy individuals for all age groups. The same findings were also reported by some researchers. We also observed that more complicated dental problems occur in intellectual disability (**Table 1- 3**). Ohtawa et al carried out a retrospective survey of the routes of referral and types of dental treatment carried out in such patients under general anesthesia at Tokyo Dental College Suidobashi Hospital. The survey covered a 5-year, 9-month period from April 2006 to December 2011, during which 163 patients, comprising 106 men and 57 women, were treated. Their age ranged widely, from 2 to 53 years, with a high proportion (118 patients, 72.4%) being minors aged under 20. Among the total number of patients, 69 (42.3%) had disorders associated with mental retardation. One hundred and two patients (62.6%) had been referred from other medical institutions, with a particularly high number coming

from public dental clinics for patients specializing in such patients. Conservative restorative procedures were performed in most cases (59.4%), with composite resin restorations being particularly frequent. After treatment, many patients returned to their referring medical institutions, which were responsible for subsequent management, but information on the posttreatment status was not available for some patients.<sup>11, 12</sup> Chen et al performed a retrospective study of consecutive CSHCN cases receiving first-time comprehensive dental treatment under general anesthesia at Taipei Veterans General hospital from 2001 to 2010. They retrieved clinical data including age, sex, types, and severity of disability, caries experience index [decayed, extracted, and filled teeth (deft) index for primary dentition/decayed, missing, and filled teeth (DMFT) index for permanent dentition], malocclusion, and treatment modalities from medical charts for analysis. The correlation between different groups of CSHCN regarding the deft/DMFT indices and treatment modalities was analyzed statistically. For the treatment modality, the number of pulp therapies with crown restoration was higher in the younger age group than in the older group. At the time of the study, 53 CSHCN had reached their full permanent dentition. We observed significantly more malocclusion of full permanent dentition in the older age group (91%) than in the younger group (35%;  $p < 0.001$ ). Unmet dental needs and caries experience indices remain high in CSHCN, regardless of the types and severity of disability. However, the younger the age at which CSHCN received their first dental treatment, the more effective the dental rehabilitation was. Parental education regarding early dental intervention and a preventive approach for

enhanced oral care is mandatory.<sup>13</sup> Lee et al reviewed in pediatric patients from 1 to 18 years old who underwent dental treatment performed under general anesthesia from January 2004 to December 2005. Patients with special health care needs who had at least one type of mental or physical disability were assigned to the disabled group (Group D) and the other healthy patients were assigned to the healthy group (Group H). The treatment modalities of operative restoration, crowns, pulp therapy, sealant and extracted teeth were compared in the two groups. A total of 185 patients were assigned to group H and 112 to group D. The patients in group D were significantly older than those in group H. There were no significant differences in the mean number of teeth treated between the two groups. However, there were a significantly greater mean total number of teeth extracted in group D patients ( $p < 0.001$ ). For very young children or those with special health care needs, dental treatment performed under general anesthesia is beneficial and efficient. The findings of this study suggest that underlying medical or mental conditions may influence the dental condition and treatment modality provided.<sup>14</sup>

## CONCLUSION

From the above results, the authors concluded that higher treatment modalities are required in patients of the disabled group. However, future studies are recommended.

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