

## COMPREHENSIVE DENTAL TREATMENTS UNDER PEDIATRIC GENERAL ANESTHESIA

### ÇOCUKLARDA GENEL ANESTEZİ ALTINDA GENİŞ KAPSAMLI DENTAL TEDAVİLER

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#### ABSTRACT

**Aim:** Dental general anesthesia (DGA) is a very effective treatment modality for children. However, DGA is a measure of the last resort because of the risks. The aim of this study is to determine the reasons for DGA, characteristics of patients and their treatments performed under pediatric DGA.

**Material and Methods:** Testing of the 99 children (66 boys and 33 girls) in the 2-14 age range whom their treatments performed under general anesthesia from 2014 to 2015. The data were collected by means of clinical dental examinations and a questionnaire of the parents. 8 question survey is designed to collect research data. The questions answered by the parents of the patient are as follows: parental education level, socioeconomic status, inbreeding, physical and mental disabilities, treatment history about DGA. Then, the records of the dental treatments were evaluated.

**Results:** In this study of 99 patients evaluated; 72 were non-cooperated, 12 were autistic, 12 had epilepsy, 3 of them had cerebral palsy were treated under general anesthesia. In total, 1020 treatments were performed under DGA, 45.8% of which were restorations, 34.4% tooth extractions, 19.8% endodontics treatments and preventive measures.

**Conclusion:** Although general anesthesia is a difficult treatment, it allows children with mental and physical disabilities and non-cooperative ones to be treated in a quality manner. This study shows that dental general anesthesia is a necessity in pediatric dentistry patients. Nevertheless, behavioral guidance techniques should also be developed.

**Keywords:** General anesthesia, pediatric patient, dental treatment

#### ÖZET

**Amaç:** Dental genel anestezi (DGA) çocuk hastalar için son derece etkili bir tedavi yöntemidir. Buna rağmen, pek çok risk barındırması sebebiyle son çare olarak değerlendirilir. Bu çalışmanın amacı genel anestezi altında yapılan dental tedavilerin sebeplerini, hastaların karakteristik özelliklerini ve yapılan tedavi seçeneklerini belirlemektir.

**Gereç ve yöntem:** 2-14 yaş aralığında değişen 99 hastanın, 2014-2016 yılları arasında genel anestezi altında dental tedavileri yapılmıştır. Veriler klinik dental muayene ve hasta velilerinin doldurduğu bir anket aracılığı ile toplanmıştır. Araştırma verilerinin toplanması için; ebeveyn eğitim düzeyi, sosyoekonomik durum, akraba evliliği, fiziksel/mental yetersizlik, genel anestezi altında yapılan tedavi geçmişi gibi konulardan oluşan 8 soruluk anket hazırlanmıştır ve yapılan dental tedavi verileri değerlendirilmiştir.

**Bulgular:** Bu çalışmada 99 hastanın verileri değerlendirilmiştir. 72 hasta kooperasyon sorunu, 12 hasta otizm, 12 hasta epilepsi, 3 hasta serebral palsi hastalığı sebepleriyle genel anestezi altında tedavi edilmiştir. Toplamda 1020 tedavi yapılmış olup; bunların 45.8 % restoratif tedavi, 34.4% diş çekimi, 19.8% endodontik tedavi ve koruyucu tedavilerdir.

**Sonuç:** Genel anestezi zor bir tedavi seçeneği olmasına rağmen; fiziksel/mental yetersizliği ve kooperasyon sorunu olan hastaların kaliteli bir şekilde tedavi edilmesini sağlar. Bu çalışma pediatrik diş hekimliği hastalarında dental genel anestezinin bir ihtiyaç olduğunu ancak davranış yönlendirme tekniklerinin geliştirilmesi gerektiğini göstermektedir.

**Anahtar kelimeler:** Genel anestezi, çocuk hasta, dental tedavi

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## INTRODUCTION

The general anesthesia is defined as a state of unconsciousness, protective reflexes are fully or partially lost, not responding to physical and verbal stimuli, it cannot be achieved airway and ventilatory/respiratory support unit is connected.<sup>1</sup>

The reasons for referral treatment for patients under general anesthesia can be listed as follows: acute infection / allergies / anatomical variations; conditions in which local anesthesia is ineffective, fear of a dentist, uncooperative behavior, mental/ physical or medical disability, a need for extensive treatment (e.g., surgical procedures) and others.<sup>2,3,4</sup>

Dental general anesthesia (DGA) is a treatment modality which has great importance for pediatric dentistry patients to provide comprehensive and high-quality dental care. All treatments can be done in a single appointment, without requiring patient cooperation. Nevertheless, as a last resort due to the adoption of general anesthesia, it can create a serious risk for overall health of the patients.<sup>5,6</sup>

The dental treatment under general anesthesia is satisfied with the parents of the patients, because of an increase in the quality of life of patients, after the operation.<sup>7,8</sup> The purpose of general anesthesia in dental treatment is to allow total oral rehabilitation, which consists of restorative treatments, pulpal treatments and extraction. Restorative procedures and simple extractions are the most frequent types of treatment modalities. However, pulpal treatments are less preferred than they are.<sup>9,10</sup>

Our aim was to determine the reasons for DGA, characteristics of patients receiving treatment under DGA and the treatments performed under DGA for children from 2014 to 2016 in Department of Pediatric Dentistry, Faculty of Dentistry, Necmettin Erbakan University.

## MATERIAL and METHODS

A total of 99 patients received treatment at Department of Pediatric Dentistry, Faculty of Dentistry, Necmettin Erbakan University between December 2014 and May 2016. The data were collected by means of clinical dental examinations and a questionnaire of the parents.

Our questionnaire examined age, gender, inbreeding, general health status, parental education,

income rate of family, place of residence and whether the child had undergone previous treatment under DGA.

- 1) Gender
- 2) Education level of parents
- 3) Inbreeding
- 4) Income rate of family
- 5) Place of residence
- 6) Knowledge of family about dental treatment under general anesthesia
- 7) Previous DGA
- 8) Medical history

Education level of parents, income rate of family and settlement questions in the survey informed us about the socio-economic levels patients of the parents'. Socioeconomic level and oral hygiene education can be linked. The income rate of levels was regulated based on the minimum wage.

In addition, the relationship between consanguineous marriages and systemic diseases was investigated. It had been examined whether healthy and disabled children have received previous treatment under DGA. Prior to the operation, the level of knowledge of family about dental treatment under general anesthesia was evaluated.

Afterwards, all patients received a dental and anesthetic assessments. Disabled patients were given priority in the order of operations. Preoperative radiographs were taken for caries diagnosis. Parents were informed to ensure fasting from midnight. Patients are treated by pediatric dentists at Meram Faculty of Medicine, Necmettin Erbakan University discharged on the same day. Instructions for home prevention were given to the parents and they were called for control a week later. Patients were re-examined one week later and the treatments were noted.

The data were prepared by counting all treatments carried out in primary and permanent teeth. Extractions, endodontics (pulpotomies and root canal treatments), restorative treatments, fissure sealants and scaling are among the treatments performed under general anesthesia. Overall oral health and hygiene achieved at the end of treatments, patients were discharged with complete healing.

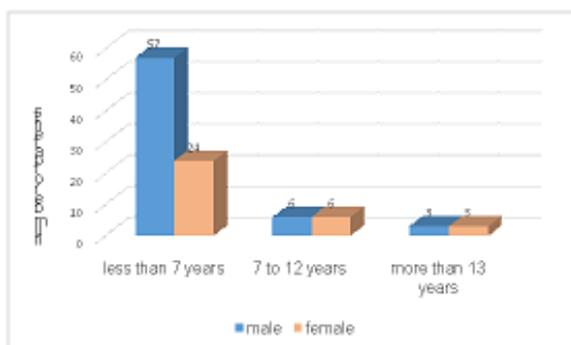


### Statistical analysis

All data were entered a computer using SPSS Statistics 22.0 Windows statistical program. The association between characteristics of patients and their treatments performed under DGA was determined using a chi-square test.

### RESULTS

A total of 99 patients (33 males and 66 females) who were referred to Necmettin Erbakan University Faculty of Dentistry, Department of Pediatric Dentistry for dental examinations were treated under DGA. Their ages ranged from 2 years to 14 years, with 81.8% under 7 years of age, 12.1% aged 7 to 12, 6.1% aged 13 years or over.



Graphic I. Gender and age distribution of patients treated under DGA.

While nearly half of the parents are high school graduates (42.4%), the number of illiterate parents are 3 types (3%). The majority of the parents (72.7%) had not consanguineous marriage. Nevertheless, 9 inbred children were treated under general anesthesia due to systemic diseases (9%).

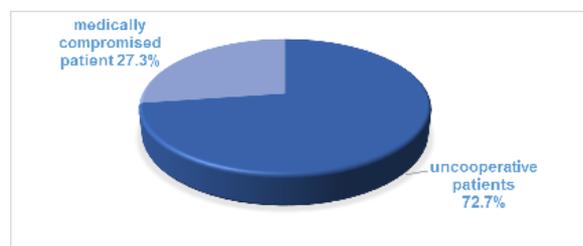
63.6% of parents stated that they have information about dental treatment under general anesthesia. Of all the patients 36.3% had previously received DGA for any operation. (Table I)

### Reasons for DGA

The vast majority of patients (72.7%) were healthy and the main reason for dental general anesthesia was behavioral problems (uncooperativeness and dental fear). 27.3% of the patients had a disability and the reasons included mental retardation, as well as physical defects, such as cerebral palsy. (Graphic II)

Table I. Description of the study population.

Variable	Total	< 7 yr	7 to 12 yr	> 13 yr
<b>Parents' education level</b>				
Illiterate	3	-	-	-
Primary	45	36	6	3
High school	42	36	3	3
University	9	6	3	-
<b>Income rate of family</b>				
Little	60	57	3	-
Normal	18	9	3	3
Good	9	3	3	3
Unanswered	12	-	-	-
<b>Previous general anesthesia</b>				
	36	30	3	3



Graphic II. Indication for dental general anesthesia.

### Treatments under DGA

A total of 1020 treatments were performed under DGA, of which 92% were treated for primary teeth. Of all treatments 46% were restorations, 34% extractions, 19.7% endodontic treatments and fewer preventive treatments. 89% of endodontic treatments were pulpotomy in primary teeth. (Table II)

Table II. Dental treatments performed under dental general anesthesia.

Treatment	Number of treatments	Percent %
Restorative treatments	468	45.8%
R.C.T	21	2.2%
Pulpotomy	180	17.6%
Extraction	351	34.4%
Fissure sealant	21	-
Scaling	3	-

Of all restorative treatments 93% were treated for primary teeth. The primary teeth with the most treatment were upper second molars (15%). Among the permanent teeth, bottom first molars were the most treated (20%). Additionally, permanent teeth extractions (6.8%) were less than primary teeth

extractions (93.2%). The teeth with the most root canal treatment were bottom primary molar teeth.

However, fissure sealants and periodontal treatments were also performed. All of the patients treated under general anesthesia were provided general oral health and hygiene.

## DISCUSSION

The purpose of this study was to report patient characteristics and dental treatments provided under DGA. The data of this study on treatment under DGA were gathered during 17-month period follow up on Department of Pediatric Dentistry, Faculty of Dentistry, Necmettin Erbakan University. Dental fear and non-cooperation were the most important factors leading to DGA in our study. The vast majority of patients who received dental treatment under DGA were healthy and uncooperative children (72.7%). It seems that earlier studies support this conclusion. Cantekin et al<sup>11</sup> stated in their study that the percentage of children treated under general anesthesia due to the cooperation problem was found to be 66.8%. The percentage was higher than those identified by Wong et al. (40%)<sup>10</sup>, Vermeulen et al. (42%)<sup>12</sup> and Tarjan et al. (49%)<sup>13</sup>. All these results indicate that the behavior management techniques need to be developed to reduce the need for general anesthesia.

36.3% of patients in the present study has previously been treated under general anesthesia. For all that, Jankauskienė et al<sup>14</sup> have recently been reported from Lithuania, that 15.3% of all patients had previously received DGA.

Restorative treatments were one of most common treatments in our study and had been reported to be the most common treatment in previous studies in many European countries<sup>13,7</sup>, North America<sup>8</sup>, the Middle East<sup>15,16</sup>, Asia<sup>17,18</sup> and New Zealand<sup>19</sup>. Dissimilar findings have recently been announced from China where DGA is used primarily for root canal treatment in children. Tooth extraction is the most commonly performed treatment in Australia and England<sup>20,21</sup>. Radical treatments have been carried out, because of the patients were late due to systemic diseases or because of their fears. For this reason, extractions and root canal treatments had been preferred. Protective treatments were applied at low rates. Oral hygiene education should be given to

parents of the patients for more conservative treatments. Patients should come to the controls more frequently.

## CONCLUSION

Although general anesthesia is a difficult treatment; is the best outcome for uncooperative and disabled children.

Most of the patients treated under general anesthesia were healthy and the main reason for the operation was behavioral management and extreme non-cooperation. Therefore, behavior management techniques should be improved to decrease the need for dental general anesthesia.

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