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Research Article

Demographic Evaluation of Patients Treated Under General Anesthesia in Dentistry

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Abstract

Aim: This study aims to evaluate the demographic characteristics of patients treated under general anesthesia in dentistry and the reasons for their admission to general anesthesia.

Material and Method: Patients treated under general anesthesia at Eskişehir Osmangazi University Faculty of Dentistry Department of Oral and Maxillofacial Surgery between May 20, 2013, and April 1, 2023, were analyzed. The relationships between age, gender, systemic diseases, reasons for general anesthesia, and dental treatment parameters under general anesthesia were evaluated for those who met the inclusion criteria. Descriptive statistics, including standard deviation, mean, minimum and maximum values, percentages, cross tables, and frequencies, were used. The chi-square test was used to evaluate relationships between groups. Post-hoc analyses were performed using the chi-square distribution's right-tailed probability to identify significant differences between groups. A significance level of $p<0.05$ was used to determine statistical significance.

Results: The data of 550 patients treated under general anesthesia were analyzed. The patients' ages ranged from 1 to 79 years, with a mean age of 16.41. The most common treatments were tooth extraction and restorative procedures. No significant relationship was found between gender and the reason for general anesthesia ($p>0.05$). However, there was a strong relationship between systemic conditions and reasons for general anesthesia ($p<0.05$). Dental phobia was more common among patients with mental retardation. Significant differences were observed in the reasons for general anesthesia across age groups ($p<0.05$).

Conclusion: The most frequent treatments under general anesthesia were tooth extraction and restorative procedures. The primary reasons for undergoing general anesthesia were anesthesia requirements, dental phobia, and gag reflex. Demographic factors such as age and systemic health significantly influence the causes and outcomes of treatments. These findings highlight the need for specific strategies to improve the effectiveness and accessibility of dental care under general anesthesia.

Keywords: General anesthesia, demographic, dentistry, dental phobia

INTRODUCTION

Anesthesia is a preferred practice to prevent the patient from feeling pain and moving (1). General anesthesia is a medical practice used to ensure that you do not feel pain and remain motionless during surgical procedures. The anesthetic agent is usually administered intravenously or by inhalation. These drugs slow down brain activity, reducing pain sensitivity and causing loss of consciousness (2). General anesthesia is used in dental practice for many reasons. While local anesthesia is often required in the practice of dental procedures, some patients may need to be placed under general anesthesia due to dental phobias or other special health conditions (3). Treatments performed under general anesthesia: restoration (including stainless steel crowns), tooth extractions, endodontic procedures (pulpotomy and root canal treatments) and surgical interventions (surgical tooth extractions, tongue and lip frenulum surgeries, surgical removal of cystic lesions, odontomas and oral soft tissue It includes procedures such as benign lesions, tooth replacements, autotransplantations, hyperplastic tissue excisions (4). Surgical interventions performed under general anesthesia have an important place in oral surgery practice. There may be reasons why general anesthesia is preferred over local anesthesia, such as painful complex surgical procedures, anatomical variation, and acute infection (5). The operations

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performed are mainly cyst/tumor, Le Fort I and sagittal split ramus osteotomies (SSRO). There may be many reasons for surgery, such as cancer, midface fractures, and better appearance (3,6). The aim of this study is to analyze the demographic characteristics of patients treated under general anesthesia to help these patients receive better care and achieve better outcomes. The hypothesis of our research is that general anesthesia is used more frequently in people with dental phobia and individuals with special needs.

MATERIAL AND METHOD

Data Collection

550 patients treated under general anesthesia at Eskişehir Osmangazi University Faculty of Dentistry, Department of Oral and Maxillofacial Surgery were included in this study. Informed consent forms were obtained from all patients and their parents before general aneshesia.The ethical compliance of our study, T.R. Approval was given by Eskişehir Osmangazi University Non-invasive Clinical Research Ethics Committee with the decision numbered 2023-15. Patients who were given an indication for general anesthesia and had complete clinical and radiological data were included in the study. Patients who were treated with local anesthesia and whose clinical and radiological data were not available were excluded from the study. Patients who underwent the procedure under general anesthesia were evaluated retrospectively and demographically. In demographic evaluation; The age, gender, systemic diseases of the patients, the procedure performed and the reason for general anesthesia were evaluated. Systemic diseases; They were classified as healthy, mentally retarded, cerebral palsy, autism, cardiovascular diseases, diabetes, thyroid, epilepsy, asthma, physical disability, Down syndrome, history of anaphylaxis and bipolar disorder. Procedures performed under general anesthesia were classified as tooth extraction, impacted tooth extraction, restorative procedures, cyst, tumor, apical resection, orthognathic surgery, sinus lift and implant, and oroantral fistula treatment. Reasons for undergoing general anesthesia: It was classified as anesthesia requirement, dental phobia, and nausea reflex.

Statistical Analysis

IBM SPSS (Statistical Package for the Social Sciences) Statics 27.0 program (IBM Corp. Released 2020. IBM SPSS Statistics for Windows, Version 27.0. Armonk, NY: IBM Corp) was used in statistical analysis. Normality of distributions was calculated using the Shapiro-Wilk test. In descriptive statistics, standard deviation, mean, minimum values, maximum values, percentages, cross tables and frequencies were used. Chi-square test was used to determine the relationships between groups. Post-hoc analyses were performed using the chi-square distribution's right-tailed probability to identify significant differences between groups. Statistical significance level was measured as $p<0.05$.

RESULTS

In this study, a total of 550 patients, 332 women (58.5%) and 228 men (41.5%), aged between 1 and 79, with an average age of 16.41±13.36, were treated under general anesthesia at Eskişehir Osmangazi University Faculty of Dentistry. data were examined. The average age of the patients in the study was 15.05±12.66 for women and 18.34±14.09 for men. The patients in the study were mostly under the age of 20, with 370 people (67.3%), while 1 person (0.2%) was at least over 70 years old. The frequencies and percentages of patients in age groups are given in Table 1. Of the patients in the study, 352 were healthy (64%), 65 had mental retardation (11.8%), 22 had cerebral palsy (4%), 36 had autism (6.5%), and 23 had cardiovascular disease (4.2%). 6 with diabetes (1.1%), 3 with thyroid disease (0.5%), 21 with epilepsy (3.8%), 9 with asthma (1.6%), 4 with physical disability (0.7%), 1 with a history of anaphylaxis (0.2%), and 1 with bipolar disorder (0.2%). 47 of the general anesthesias were performed due to the need for anesthesia (8.5%), 423 due to dental phobia (76.9%) and 80 due to nausea reflex (14.5%). Due to the need for anesthesia, 24 males (7.5%) and 23 females (10.1%); 259 men (80.4%) and 164 women (71.9%) due to dental phobia; Due to nausea reflex, 39 men (12.1%) and 41 women (18%) were taken under general anesthesia. In the chi-square test performed to examine the relationship between gender and the reason for undergoing general anesthesia, the p value was higher than 0.05. There is no significant difference between gender and the reason for undergoing general anesthesia. When we examine the reasons for undergoing general anesthesia according to systemic conditions, the healthy group is the most prevalent in all three reasons. The second most common systemic condition group in patients undergoing general anesthesia due to dental phobia is patients with mental retardation, and the third most common is patients with autism (Table 2). In the chi-square test performed to examine the relationship between systemic status and the reason for undergoing general anesthesia.There is a significant difference between the reason for undergoing general anesthesia and the systemic condition ($p<0.05$). Post-hoc analysis was performed with the right-tailed probability of the chi-square distribution to look at the differences between the groups ($p=0.001$ significance value was determined). The number of patients in the healthy group in the group that required general anesthesia was significantly higher than expected ($p<0.001$). Among the groups that underwent general anesthesia due to dental phobia, the healthy group ($p<0.001$) and the diabetes group ($p<0.001$) were significantly less than expected, while the mental retardation ($p<0.001$) and autism group ($p<0.001$) were significantly more than expected. has come out. In the group taken under general anesthesia with nausea reflex, the mental retardation group ($p<0.001$) was significantly lower than expected, while

the diabetes group (p<0.001) was significantly higher than expected. When we examine the reasons for undergoing general anesthesia according to age groups, the need for anesthesia is highest in the group between the ages of 20 and 30, dental phobia is highest in the group under the age of 20, then in the group between the ages of 20 and 30, and nausea reflex is highest in the group between the ages of 30 and 40, and then in the group between the ages of 20 and 20. It is in the 30-year age group (Table 3).

Table 1. Distributionof patients by age groups

Age groups	N	%
Under 20	370	67.3
Between 20-30 years	81	14.7
Between 30-40 years	55	10
Between 40-50 years	31	5.6
Between 50-60 years	10	1.8
Between 60-70 years	2	0.4
Over 70 years old	1	0.2

Table 2. Reasons for undergoing general anesthesia according to systemic conditions

Systemic status		Reason for general anesthesia			Total
		Requirement for anesthesia	Dental phobia	Nausea reflex	
Healthy	N	41	249	62	352
	%	11.6	70.7	17.6	100.0
Mentally retarded	N	0	65	0	65
	%	0.0	100.0	0.0	100.0
Cerebral palsy	N	0	22	0	22
	%	0.0	100.0	0.0	100.0
Autism	N	0	36	0	36
	%	0.0	100.0	0.0	100.0
Cardiovascular disease	N	3	15	5	23
	%	13.0	65.2	21.7	100.0
Diabet	N	1	0	5	6
	%	16.7	0.0	83.3	100.0
Thyroid disease	N	0	2	1	3
	%	0.0	66.7	33.3	100.0
Epilepsy	N	0	14	7	21
	%	0.0	66.7	33.3	100.0
Asthma	N	0	9	0	9
	%	0.0	100.0	0.0	100.0
Physically disabled	N	2	2	0	4
	%	50.0	50.0	0.0	100.0
Down syndrome	N	0	7	0	7
	%	0.0	100.0	0.0	100.0
History of anaphylaxis	N	0	1	0	1
	%	0.0	100.0	0.0	100.0
Bipolar disorder	N	0	1	0	1
	%	0.0	100.0	0.0	100.0
Total	N	47	423	80	550
	%	8.5	76.9	14.5	100.0

Table 3. Age-based comparison of reasons for general anesthesia

Age groups		Reason for general anesthesia			Total
		Requirement for anesthesia	Dental phobia	Nausea reflex	
Under 20	N	7	360	3	370
	%	1.9	97.3	0.8	100.0
20-30 years between	N	15	41	25	81
	%	18.5	50.6	30.9	100.0
30-40 years between	N	9	13	33	55
	%	16.4	23.6	60.0	100.0
40-50 years between	N	8	7	16	31
	%	25.8	22.6	51.6	100.0
50-60 years between	N	6	2	2	10
	%	60.0	20.0	20.0	100.0
60-70 years between	N	1	0	1	2
	%	50.0	0.0	50.0	100.0
Over 70 years old	N	1	0	0	1
	%	100.0	0.0	0.0	100.0
Total	N	47	423	80	550
	%	8.5	76.9	14.5	100.0

In the chi-square test performed to examine the relationship between age groups and the reason for undergoing general anesthesia, p was <0.001. Post-hoc analysis was performed with the right-tailed probability of the chi-square distribution to look at the differences between the groups (p=0.0023 significance value was determined). While the group under the age of 20, who underwent general anesthesia due to the need for anesthesia, was significantly lower than expected (p<0.0023), the group between the ages of 20-30, the group between the ages of 40-50, the group between the ages of 50-60 and the group over the age of 70 were significantly higher than expected (p<0.0023). Among the groups that underwent general anesthesia due to dental phobia, the group under the age of 20 was significantly higher than expected (p<0.0023), while the group between the ages of 20-30, the group between the ages of 30-40, the group between the ages of 40-50, the group between the ages of 50-60. It was significantly higher than expected (p<0.0023). In the groups under general anesthesia due to nausea reflex, the group under the age of 20 was significantly less than expected (p<0.0023), while the group between the ages of 20-30, the group between the ages of 30-40 and the group between the ages of 40-50 were significantly higher than the expected (p<0.0023). Of the treatments performed under general anesthesia, 93 were tooth extraction (16.9%), 92 were impacted tooth extraction (16.7%), 318 were tooth extraction (57.8%) and restorative procedures, 18 were cysts (3.3%), 6 were cysts (3.3%), and 6 were cysts (3.3%). 1 tumor (1.1%), 9 cyst and apical resection (1.6%), 12 orthognathic surgery (2.2%), 1 sinus lift and implant (0.2%), 1 of which is the treatment of oroantral fistula (0.2%). When we examine the treatments performed under general anesthesia by gender, men are mostly in the tooth extraction and restorative procedure, impacted tooth extraction and tooth extraction groups, respectively. Women are mostly found in the tooth extraction and restorative procedure, tooth extraction and impacted tooth extraction groups, respectively (Table 4).

Table 4. Treatments performed under general anesthesia according to gender

Dental treatment under general anesthesia	Gender				Total	
	Male		Female			
	N	%	N	%	N	%
Tooth extraction	51	15.8	42	18.4	93	16.9
Impacted tooth extraction	55	17.1	37	16.2	92	16.7
Tooth extraction and restorative process	190	59.0	128	56.1	318	57.8
Cyst	7	2.2	11	4.8	18	3.3
Tumor	2	0.6	4	1.8	6	1.1
Cyst and apical resection	8	2.5	1	0.4	9	1.6
Orthognathic surgery	7	2.2	5	2.2	12	2.2
Sinus lift and implant	1	0.3	0	0.0	1	0.2
Oroantral fistula treatment	1	0.3	0	0.0	1	0.2

In the chi-square test performed to examine the relationship between gender and treatment under general anesthesia, p>0.05 was found. There is no significant difference between treatment performed under general anesthesia and gender. When we examined the treatments performed under general anesthesia according to systemic conditions, the most frequent tooth extractions and restorative procedures were performed in all systemic diseases except bipolar disorder (Table 5).

Table 5. Treatments performed under general anesthesia for systemic conditions

Systemic status		Dental treatment under general anesthesia									Total
		Tooth extraction	Impacted tooth extraction	Tooth extraction and restorative treatment	Cyst	Tumor	Cyst and apical resection	Orthognathic surgery	Sinus lift and implant	Orontral fistula treatment	
Healthy	N	72	62	177	14	6	9	11	1	0	352
	%	20.5	17.6	50.3	4.0	1.7	2.6	3.1	0.3	0.0	100.0
Mentally retarded	N	5	11	49	0	0	0	0	0	0	65
	%	7.7	16.9	75.4	0.0	0.0	0.0	0.0	0.0	0.0	100.0
Cerebral palsy	N	2	1	19	0	0	0	0	0	0	22
	%	9.1	4.5	86.4	0.0	0.0	0.0	0.0	0.0	0.0	100.0
Autism	N	2	6	28	0	0	0	0	0	0	36
	%	5.6	16.7	77.8	0.0	0.0	0.0	0.0	0.0	0.0	100.0
Cardiovascular disease	N	6	2	13	2	0	0	0	0	0	23
	%	26.1	8.7	56.5	8.7	0.0	0.0	0.0	0.0	0.0	100.0
Diabet	N	0	2	2	1	0	0	0	0	1	6
	%	0.0	33.3	33.3	16.7	0.0	0.0	0.0	0.0	16.7	100.0
Thyroid disease	N	0	1	2	0	0	0	0	0	0	3
	%	0.0	33.3	66.7	0.0	0.0	0.0	0.0	0.0	0.0	100.0
Epilepsy	N	5	5	11	0	0	0	0	0	0	21
	%	23.8	23.8	52.4	0.0	0.0	0.0	0.0	0.0	0.0	100.0
Asthma	N	0	0	9	0	0	0	0	0	0	9
	%	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
Physically disabled	N	0	1	1	1	0	0	1	0	0	4
	%	0.0	25.0	25.0	25.0	0.0	0.0	25.0	0.0	0.0	100.0
Down syndrome	N	0	1	6	0	0	0	0	0	0	7
	%	0.0	14.3	85.7	0.0	0.0	0.0	0.0	0.0	0.0	100.0
History of anaphylaxis	N	0	0	1	0	0	0	0	0	0	1
	%	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
Bipolar disorder	N	1	0	0	0	0	0	0	0	0	1
	%	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
Total	N	93	92	318	18	6	9	12	1	1	550
	%	16.9	16.7	57.8	3.3	1.1	1.6	2.2	0.2	0.2	100.0

In the chi-square test performed to examine the relationship between systemic status and dental treatment under general anesthesia, p was <0.001. Post-hoc analysis was performed with the right-tailed probability of the chi-square distribution to look at the differences between the groups (p=0.00042 significance value was determined). While the healthy group was significantly lower than expected in tooth extraction and restorative procedures (p<0.00042), the diabetes group was significantly higher than expected in oroantral fistula treatment (p<0.00042). When we examined the dental treatments performed under general anesthesia according to age groups, the most tooth extraction and restorative procedures were performed, except for the group between the ages of 50-60 and over the age of 70. In the 20-year age group, which has the largest number of samples, the most frequent tooth extractions, restorative procedures, tooth extractions and impacted tooth extractions were performed (Table 6).

In the chi-square test performed to examine the relationship between age groups and dental treatment under general anesthesia, p was <0.001. Post-hoc analysis was performed with the right-tailed probability of the chi-square distribution to look at the differences between the groups (p=0.00079 significance value was determined). In the groups that underwent general anesthesia due to

tooth extraction, the group under 20 years of age was significantly higher than expected (p<0.00079), while the group between 20-30 years of age was significantly lower than expected (p<0.00079). In the groups that underwent general anesthesia due to impacted tooth extraction, the group under 20 years of age was significantly lower than expected (p<0.00079), while the group between 20-30 years of age was significantly higher than expected (p<0.00079).

In the groups under general anesthesia due to tooth extraction and restorative procedures, the group under 20 years of age was significantly higher than expected (p<0.00079). In the groups that underwent general anesthesia due to cyst treatment, the group under the age of 20 was significantly lower than expected (p<0.00079), while the group between the ages of 50-60 and the group over 70 years of age was significantly higher than expected (p<0.00079). In the groups that underwent general anesthesia due to cysts and apical resection, the group under 20 years of age was significantly lower than expected (p<0.00079), while the group between 20-30 years of age was significantly higher than expected (p<0.00079). In the groups that underwent general anesthesia due to orthognathic surgery, the group under 20 years of age was significantly lower than expected (p<0.00079), while the group between 20-30 years of age was significantly higher than expected (p<0.00079).

Table 6. Dental treatments performed under general anesthesia by age groups

Dental treatment under general anesthesia	Age groups							Total
	Under 20	20-30 between ages	30-40 between ages	40-50 between ages	50-60 between ages	60-70 between ages	Over 70 years old	
Tooth extraction	80	3	3	6	1	0	0	93
Impacted tooth extraction	40	27	15	8	1	1	0	92
Tooth extraction and restorative treatment	245	35	25	10	2	1	0	318
Cyst	2	4	2	4	5	0	1	18
Tumor	3	1	1	1	0	0	0	6
Cyst and apical resection	0	1	5	2	1	0	0	9
Orthognathic surgery	0	10	2	0	0	0	0	12
Sinus lift and implant	0	0	1	0	0	0	0	1
Oroantral fistula treatment	0	0	1	0	0	0	0	1
Total	370	81	55	31	10	2	1	550

When we compare the reasons for undergoing general anesthesia compared to dental treatments performed under general anesthesia, the need for anesthesia was mostly in cyst patients, while dental phobia and nausea reflex occurred mostly in tooth extraction and restorative procedure patients (Table 7).

In the chi-square test performed to examine the relationship between the reasons for undergoing general anesthesia and the dental treatment performed under general anesthesia, p was <0.001. Post-hoc analysis was performed with the right-tailed probability of the chi-square distribution to look at the differences between the groups (p=0.0018 significance value was determined). In the groups where tooth extraction was performed under general anesthesia, there were significantly fewer patients who were taken under general anesthesia due to the need for anesthesia (p<0.0018), while those who were taken due to dental phobia were significantly more (p<0.0018). In the groups where impacted tooth extraction was performed under general anesthesia, there were significantly fewer patients taken under general anesthesia due to dental phobia (p<0.0018), while there were significantly more patients taken due to nausea reflex (p<0.0018). In the group where tooth extraction and restorative procedures were performed under general anesthesia, the group taken due to the need for anesthesia was significantly lower than expected (p<0.0018), while the group taken due to dental phobia was significantly higher than expected (p<0.0018). In the groups where cyst treatment was performed under general anesthesia, those removed due to the need for anesthesia were significantly higher than expected (p<0.0018), while those removed due to dental phobia were significantly less than expected (p<0.0018). In the groups where tumor treatment was performed under general anesthesia, the number of patients taken due to the need for anesthesia was significantly higher than expected (p<0.0018), while the number of patients taken due to dental phobia was significantly lower than expected (p<0.0018). In patients who underwent cyst and apical resection treatment under general anesthesia, the number of patients taken under general anesthesia due to the need for anesthesia was significantly higher than expected (p<0.0018), while the number of patients taken due to dental phobia was significantly lower than expected (p<0.0018). Among patients who underwent orthognathic surgery under general anesthesia, the number of patients taken under general anesthesia due to the need for anesthesia was significantly higher than expected (p<0.0018), while the number of patients taken under general anesthesia due to dental phobia was significantly lower than expected (p<0.0018).

Table 7. Relationship between causes and types of treatments performed under general anesthesia

	Reason for general anesthesia							
	Requirement for anesthesia		Dental phobia		Nausea reflex		Total	
	N	%	N	%	N	%	N	%
Tooth extraction	0	0.0	85	20.1	8	10.0	93	16.9
Impacted tooth extraction	5	10.6	54	12.8	33	41.3	92	16.7
Tooth extraction and restorative treatment	0	0.0	281	66.4	37	46.3	318	57.8
Cyst	18	38.3	0	0.0	0	0.0	18	3.3
Tumor	6	12.8	0	0.0	0	0.0	6	1.1
Cyst and apical resection	7	14.9	2	0.5	0	0.0	9	1.6
Orthognathic surgery	11	23.4	1	0.2	0	0.0	12	2.2
Sinus lift and implant	0	0.0	0	0.0	1	1.3	1	0.2
Oroantral fistula treatment	0	0.0	0	0.0	1	1.3	1	0.2
Total	47	100.0	423	100.0	80	100.0	550	100.0

DISCUSSION

The most common reasons for dental treatments performed under general anesthesia are lack of cooperation and multiple systemic diseases (7-10). 45% of dental treatments performed under general anesthesia were performed due to lack of cooperation due to autism, dementia, mental retardation and other mental problems (7,11,12). Patients with autism spectrum disorder should be examined individually when choosing local anesthesia, sedation or general anesthesia because cooperation varies from patient to patient. Depending on their learning difficulties and cooperation, repeated learning can increase their cooperation and allow them to be treated without general anesthesia (10,13). More teeth may be extracted in patients with autism spectrum disorder due to cooperation problems and poor oral hygiene (14,15). Due to different cooperation difficulties in patients with mental retardation, general anesthesia preferences should be made individually for the patient (16). Cerebral palsy is one of the most common reasons for dental treatments performed under general anesthesia due to muscle paralysis, muscle weakness, involuntary movements, poor coordination and other motor dysfunctions (17).

Patients with special needs have a higher prevalence of oral diseases because it is more difficult for them to maintain oral hygiene compared to other patients (18). While untreated caries is 22.7% in the general population, it is 32.2% in those with mental and/or developmental disabilities, edentulism is 7.6% in the general population and 10.9% in those with mental and/or developmental disabilities, while the average missing tooth is 3.6 in the general population and 6.7% in those with mental and/or developmental disabilities (19). However, some studies have shown that patients with psychiatric problems have poorer oral hygiene than adult patients with physical or mental disabilities (20,21). The most common dental treatment performed under general anesthesia is tooth extraction, as opposed to longer and more complex treatments such as root canal treatment (21,22).

In a retrospective study on dental treatments under general anesthesia conducted in Türkiye in 2015, the average age of the patients was 16.78±12.7 years. Gender distribution is 59.3% male and 40.7% female among 467 people. 51.2% of the dental treatments applied to patients are tooth extraction, 40.9% are fillings and tooth extractions, and 7.9% are maxillofacial surgery. 24.4% of the patients in the study had mental retardation, 7.1% cerebral palsy, 3.9% epilepsy, 6% autism, 2.4% Down syndrome, 1.5% schizophrenia, 0.2% morbid obesity, 12.2%. 100% with mental retardation and epilepsy, 0.6% with cerebral palsy and mental retardation, 5.1% with epilepsy and While 1.7% have mental retardation, epilepsy and cerebral palsy, 34.9% have no known disease. 45.6% of dental treatments were performed under general anesthesia due to lack of cooperation, 38.9% for mental retardation, 5.9% for autism, 1.7% for schizophrenia, and 7.9% for maxillofacial surgery. The average duration of dental treatments administered to patients under general anesthesia is 114.53±35.4 minutes. The average time it takes for patients to recover after general anesthesia is 40.47±6.0 minutes (12). In our study, the data of 550 patients, 332 women (58.5%) and 228 men (41.5%), whose ages ranged from 1 to 79 years old and whose average age was 16.41 years, were examined. In our study, dental treatment was performed under general anesthesia mostly on mentally retarded individuals, apart from the healthy group. Patients mostly underwent dental treatment under general anesthesia due to dental phobia. More male patients were treated under general anesthesia due to dental phobia. General anesthesia durations were not examined in our study. In 2016, Shin et al. (23) In his study, the ages of the patients ranged from 1 to 16 and 176 were males (66.9%) and 87 were females (33.1%). The average duration of general anesthesia for patients was 132.7±77.6 minutes, and the average duration of treatment was 101.9±71.2 minutes. Of the 380 treatments performed, 106 were surgical, 33 were prosthetic, 158 were restorative,

11 were preventive, and 72 were endodontic treatments. Of the treatments performed, 127 were for dental anxiety, 38 for mental retardation, 29 for age-related non-cooperation, 29 for mental illness, 26 for autism, 18 for developmental disorder, 10 for nausea reflex, 6 for physical therapy. disability, 4 due to asthma and 3 due to epilepsy. Similarly, in our study, the most commonly applied treatment under general anesthesia is tooth extraction and restorative procedures. Similarly, in our study, the reason for taking general anesthesia was mostly due to dental phobia.

In the study of Schnabl et al. (20) on 444 adult patients with an average age of 37.37±13.78 years who received dental treatment under general anesthesia, there were 245 males (55.2%) and 199 females (44.8%). 226 (56.2%) of the men have a physical or mental disability, and 19 (45.2%) have a psychiatric disease. Of the women, 176 (43.8%) have a physical or mental disability and 23 (54.8%) have a psychiatric disease. Among patients treated under general anesthesia, those with physical or mental disabilities are significantly more likely than those with psychiatric illnesses. While the average number of teeth restored under general anesthesia in each of 402 patients with physical or mental disabilities was 5.34±4.41, the average number of teeth extracted was 2.6±3.96. While the average number of teeth restored under general anesthesia in each of the 42 patients with psychiatric illness was 7.98±5.4, the average number of teeth extracted was 4.86±4.51. The number of teeth restored under general anesthesia was significantly higher than the number of teeth extracted, both in patients with physical or mental disabilities and in patients with psychiatric diseases. In our study, apart from healthy individuals, tooth extraction and restorative procedures performed under general anesthesia were mostly performed on mentally retarded and autistic individuals. In our study, the number of extracted and restored teeth was not compared.

Choi and Doh (24), in their review of dental treatments performed under general anesthesia in 2021, they found autism, mental retardation, dementia, panic attack due to cooperation problems, cerebral palsy due to motor dysfunction, epilepsy, Parkinson's, other neurological disorders, skeletal muscle diseases; They stated that Down syndrome and other genetic diseases due to craniofacial anomalies are indications for dental treatment performed under general anesthesia.

According to the study conducted by Mastilovic et al. (25) in 2021, 257 patients aged between 18 and 68.8 had an average of 8.69±13.1 dentist appointments in 10 years, 3.64±4.42 of them had dental restoration and 6.64±5.95 had tooth extraction, and the average treatment time of these patients was 1.47 months.±0.8 have been shown to be performed under general anesthesia. Among these patients, mentally retarded patients showed a significant decrease in dentist appointments compared to other patients (5.00±5.66) and a significant increase in tooth extraction treatment compared to other patients (12.0±8.49). It has also been shown that the patient's condition and mental retardation cause a significant increase in dental restoration and extraction performed under general anesthesia. In our study, individuals with mental retardation received more dental treatment under general anesthesia than those with other systemic conditions.

Marinho et al. (26) in 2022, the distribution products it makes with technologies, which are special treatments for dental treatment under general anesthesia in private and public health services, are in the 6-80 age range and 100 of them are accessible, 62% are men and 38% are women. The most commonly diagnosed treatable medical diseases are autistic spectrum disorder (33%), followed by mental retardation (27%) and cerebral palsy (10%). The most common International Association of Disability and Oral Health (IADH) categories are behavioral and psychiatric disorders (41%), followed by mental and physical disabilities (39%). Anesthesiologists, technicians and medical personnel adopted a general anesthesia sequence similar to the literature, using inhalation sedation together with intravenous drug administration, followed by nasotracheal intubation and sevoflurane gas. The duration of general anesthesia was determined as 3 hours on average for each patient, and it was reported that no complications were observed related to general anesthesia and no problems occurred in recovery. It was reported that 52% of private health institutions and 5% of patients with special needs admitted by public hospitals received dental treatment before general anesthesia. While dental complaints reported by patients or their relatives were dental pain in the private sector (65%), it was reported as 54% in public hospitals. In our study, public and private health services were not compared, and the group most frequently receiving dental treatment under general anesthesia is the mental retardation group, not the autism group.

Kasemkhun et al. (27) in their study titled retrospective comparison of dental treatments performed under general anesthesia and non-pharmacological approach in patients with special health needs in 2022, there were 261 patients with an average age of 14.22±8.64 years and ages ranging from 2.2 to 43.1 years. The ratio between cases treated under general anesthesia and non-pharmacological treatment was determined as 1.6:1. The general anesthesia group was significantly higher in mean age, caries experience, lack of cooperation and need for treatment than the non-pharmacological treatment group. Additionally, control rates in the general anesthesia group were significantly lower compared to the non-pharmacological treatment group, but no significant difference was observed in terms of regularity. After 24 months of follow-up, the frequency of new cavities and the time to detection of cavities were found to be faster in the general anesthesia group, as well as significant behavioral changes. In our study, general anesthesia and non-pharmacological treatments were not compared.

In the literature review, Karaduran et al. (28) reported that general anesthesia in dentistry is a procedure that can be applied to uncooperative patients, those with health risks, or individuals with disabilities. They noted a significant relationship between complications that may occur during or after general anesthesia and factors such as treatment duration, treatment procedures, and the potential need for repeat general anesthesia. The authors emphasized that patients and their families should be thoroughly informed about the risks and complications of general anesthesia beforehand. As a conclusion, they highlighted the importance of implementing preventive measures and ensuring regular follow-ups after dental treatments performed under general anesthesia.

CONCLUSION

It has been observed that the most common reasons for the need for general anesthesia are the need for anesthesia, dental phobia and nausea reflex. Among the patients who were taken under general anesthesia due to dental phobia, individuals with mental retardation were the most common ones. It has been determined that the most frequently performed dental treatments under general anesthesia are tooth extraction, impacted tooth extraction and restorative procedures. It has been observed that the need for anesthesia occurs mostly in cyst patients, and dental phobia and nausea reflex occur in patients with tooth extraction and restorative procedures.

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