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SPECIFIČNOSTI ORALNOHIRURŠKE REHABILITACIJE PACIJENATA SA POSEBNIM POTREBAMA U OPŠTOJ ANESTEZIJI

SPECIFICITIES OF ORAL SURGICAL REHABILITATION OF PATIENTS WITH SPECIAL NEEDS UNDER GENERAL ANESTHESIA

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Sažetak

Uvod: Osobe sa posebnim potrebama imaju dugotrajna fizička, mentalna, intelektualna ili senzorna oštećenja koja mogu ometati njihovo puno i efektivno učešće u društvu. Visoka učestalost oralnih bolesti je veoma česta kod ove populacije i oni posećuju stomatologa kada je potrebno hitno lečenje. **Cilj:** Ova studija je imala za cilj da izvrši analizu stomatoloških

Cilj: Ova studija je imala za cilj da izvrši analizu stomatoloških tretmana osoba sa posebnim potrebama u opštoj anesteziji na Klinici za stomatološku medicinu u Nišu u roku od tri godine, sa posebnim osvrtom na njihovo oralno-hirurško lečenje. **Materijali i metode:** Retrospektivnom studijom obuhvaćeni su

Materijali i metode: Retrospektivnom studijom obuhvaćeni su pacijenti sa posebnim potrebama kojima je urađena restauracija zuba u opštoj anesteziji na Klinici za stomatološku medicinu u Nišu u periodu od tri godine od 1. decembra 2021. do 1. decembra 2024. Prikupljeni su demografski podacima o pacijentima, kao i oni o njihovom zdravstvenom stanju uz datum obavljanja.

njihovom zdravstvenom stanju uz datum obavljanja. **Rezultati:** U datom periodu, u opštoj anesteziji je lečeno 124 pacijenata sa posebnim potrebama, uzrasta 29,31 \pm 5,59 godina i oba pola skoro podjednako zastupljena. Kod 74,2% njih istovremeno su rađene i konzervativna restauracija i oralna hirurška restauracija zuba, 4,03% je podvrgnuto samo konzervativnoj restauraciji, a 21,77% samo oralno-hirurškom lečenju. Svaki pacijent je imao u proseku 9,04 \pm 5,56 popravljenih zuba sa stopom koja je značajno veća za ekstrahovane nego konzervativno popravljene zube (p = 0,007). **Rezultati:** Stometoložit izeman pacijanata sa posebnim potrebama

Rezultati: Stomatološki tretman pacijenata sa posebnim potrebama se uglavnom obavlja u zdravstvenim ustanovama na tercijarnom nivou, u opštoj anesteziji i praćen je višestrukim vađenjem zuba. **Zakljucak:** Uključivanje ovih pacijenata u sisteme stomatološkog monitoringa bi znatno olakšalo upravljanje njihovim stomatološkim problemima i smanjilo broj urgentnih stomatoloških tretmana, kao i rehabilitaciju u opštoj anesteziji.

Ključne reči: posta anestezija, osobe ometene u razvoju, stomatoloska zastita

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Abstract

Introduction: People with special needs have long-term physical, mental, intellectual or sensory impairments that can hinder their full and effective participation in society. A high frequency of oral diseases is very common in this population and they visit the dentist when it is necessary to provide urgent treatment.

Aim: This study aimed to perform an analysis of the dental treatments among people with special needs provided under general anesthesia at the Clinic for Dental Medicine in Niš within three years, with special reference to their oral surgical treatment.

general anesthesia at the Clinic for Denial Mealchie in Nis within three years, with special reference to their oral surgical treatment. **Materials and methods:** The retrospective study involved patients with special needs who underwent a tooth restoration under general anesthesia at the Clinic for Dental Medicine in Niš within three years from December 1, 2021 to December 1, 2024. Demographic data on patients as well as the ones on their health status along with the date of dental intervention, type and reference number of dental services provided under general anesthesia were collected.

collected. **Results:** During the given period, 124 patients with special needs, within the age range 29.31 \pm 5.59 and both genders nearly equally represented were treated under general anesthesia. In 74.2% of them, both conservative restoration and oral surgical restoration of teeth were performed at the same time, 4.03% underwent only conservative restoration and 21.77% only oral surgical treatment. Each patient had an average of 9.04 \pm 5.56 repaired teeth with rate which is significantly higher for extracted than conservatively repaired teeth (p = 0.007).

Each patient had an average of 9.04 ± 0.50 reparted teen with rate which is significantly higher for extracted than conservatively repaired teeth (p = 0.007). **Results:** Dental treatment of patients with special needs is mainly provided in health care institutions at the tertiary level, under general anesthesia and is accompanied by multiple tooth extractions.

Conclusion: The inclusion of these patients in dental monitoring systems would make it much easier to manage their dental problems and decrease the number of urgent dental treatments as well as general anesthesia rehabilitation.

Key words: general anesthesia, developmentally disabled persons, dental care

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Introduction

Based on the United Nations Convention, people with special needs have long-term physical, mental, intellectual or sensory impairments that, in interaction with various obstacles, can hinder their full, efficient and equal participation in society¹. It is estimated that people with special needs make up about 16% of the overall global population². Unfortunately, there is no official data on their number or the official register available in our country.

People with special needs are at high risk when it comes to the occurrence of all oral diseases. Numerous epidemiological studies indicate that people with special needs have an extremely high prevalence of untreated caries and gingival periodontal diseases, which inevitably lead to numerous complications such as pain, swelling, and early tooth $loss^{3-6}$. The aforementioned complications have a negative impact on the performance of the masticatory apparatus of these people, whose basic diseases are often accompanied by changes in the level of the orofacial region, such as macroglossia, the structure and number of teeth disorders, severe orthodontic irregularities. As a result, such changes create a very negative impact on quality of life of these people; furthermore, it affects quality of life of their family members/guardians

People with special needs encounter numerous barriers when it comes to providing adequate dental care. These barriers related to providing dental care are divided into physical and non-physical based on the dentist's point of view, guardian's perspective and finally, the perspective of the patients themselves. As a rule, this population functions within its primary families, even though a significant number reside in specialized institutions and custody; unfortunately some of them live alone¹⁰. In the literature, what seems to be the main obstacles for people with special needs are the dentists' insufficient preparedness to help these people, structural problems related to accessibility to dental offices, difficulties in communication, lack of awareness to conduct dental treatments and insufficient number of specialized dental services. Moreover, due to the inadequate cooperation with the patients in a regular dental office, it is very often impossible to diagnose mouth and dental diseases using standard dental procedures as well as diagnostic imaging of the teeth. For this reason, these patients visit the dentist when urgent dental treatment is indicated, which, due to the impossibility of adequate cooperation with the patient as well as numerous associated ailments, is carried out in dental health care units of the tertiary level. In Serbia, one such

institution is The Clinic of Dental Medicine in Niš, a highly-specialized, stationary, specialist and consultancy-oriented healthcare unit in the Serbian healthcare system for the territory of south Serbia and as such it provides healthcare dental services on the tertiary level. Based on the population census conducted in 2022, this institution provides services for the population of 1,406,050 from south and east Serbia but also for patients coming from other parts of the country.

Aim

Having in mind all the above mentioned facts, this study aimed to analyze the dental treatment of people with special needs provided under general anesthesia at the Clinic for Dental Medicine in Niš during a period of three years, with special reference to the oral surgical treatment of these patients.

Materials and Methods

A retrospective study was conducted at the Dental Clinic in Niš during the three months from December 1, 2021 to December 1, 2024, and included patients with special needs who underwent tooth restoration under general anesthesia. The study involved only adults with special needs treated under general anesthesia during the specified period (Aproval of Ethical Comitee 14/7-2023-2 EO). Based on the patients' dental records, their demographic data (gender, date and place of birth, permanent residence), as well as the data on patients' health status along with the date, type and number of dental interventions provided under general anesthesia were collected.

Statistical data processing was conducted in the MC Excel program. Within framework of descriptive the statistics, numerical data are presented with measures of central tendency (mean value) and measures of variability (standard deviation). Attributive features are presented in the form of absolute and relative numbers. The comparison of numerical variables was performed with the Ttest, and the results were considered significant for p < 0.05. The obtained results are presented through charts and graphs.

Results

During the analyzed period, a total of 124 patients with special needs of approximate gender representation (52.4% male and 47.6% female) underwent dental treatment under general anesthesia at the Clinic for Dental Medicine in Niš. The average age of the respondents for the analyzed three-year period was 29.31 ± 5.59 . The biggest portion of rehabilitated patients was within 20 to 30 age range. Also, the biggest portion of rehabilitated patients came from related institutions while smaller number was settled in primary families. Basic demographic characteristics of patients are shown in Table 1.

All analyzed patients with special needs had a mental disorder of varying degrees of severity accompanied by cerebral paralysis, epilepsy, diseases of the cardiovascular system or some syndromes such as Down's syndrome. The biggest portion of people with special needs, 56 of them, was rehabilitated in the period from December 1, 2022 to November 30, 2023 which is 45.16% of the total number of patients included in the analysis (Figure 1). X-ray imaging as part of the pre-operational preparation of the patients was only possible in 24% of the examined patients.

December 1, 2021–November 30, 2024 December 1, 2023–November 30, 2024 December 1, 2022–November 30, 2023 December 1, 2021–November 30, 2022

	Male	Female	18–20 age range N (%)	21–30 age range	Over 31 age range N (%)
	N (%)	N (%)		N (%)	
Dec. 1, 2021-Nov. 30, 2022	15 (48.4%)	16 (51.6%)	2 (6.5%)	17 (54.8%)	12 (38.7%)
Dec. 1, 2022-Nov. 30, 2023	33 (58.9%)	23 (41.1%)	2 (3.6%)	38 (67.8%)	16 (28.6%)
Dec. 1, 2023-Nov. 30, 2024	17 (46%)	20 (54%)	6 (16.2%)	25 (67.6%)	6 (16.2%)
Total	65 (52.4%)	59 (47.6%)	10 (8.1%)	80 (64.5%)	34 (27.4%)

Table 1. Basic demographic characteristics of patients



Figure 1. Distribution of the number of treated patients during the analyzed period

As part of the dental restoration, each patient underwent the removal of soft and hard dental deposits using standard methods before providing the indicated dental interventions. In the biggest portion of examined patients (74.2%), both conservative tooth restoration and oral surgical tooth restoration were performed under general anesthesia. Only conservative tooth restoration was performed in 4.03 patients, while only oral surgical treatment was provided for 21.77% of analyzed patients (Figure 2).

Oral surgical rehabilitation Conservative rehabilitation

Conservative and oral surgical rehabilitation

In each patient, an average of 9.04 ± 5.56 teeth were rehabilitated (Table 2). There were significantly more extracted than conservatively rehabilitated teeth (p = 0.007). In each patient, on average, 3.09 ± 3.24 teeth were rehabilitated conservatively, and 5.23 ± 5.05 teeth were extracted. The biggest portion of patients had between 5 and 10 teeth for

conservative restoration and extraction— 44.71% of them, while 31.72% of the examined patients had more than 10 teeth for conservative and surgical restoration. Twentythree point fifty-seven percent of examined patients had up to 5 teeth for rehabilitation (Table 3). When it comes to oral surgical interventions, three patients underwent surgical removal of impacted teeth, while one patient had apicectomy of two teeth and the other patients underwent tooth extraction (Figure 4).



Figure 2. Dental interventions performed under general anesthesia in the analyzed group of patients

		Average number of repaired teeth AS ± SD*	Average number of extracted teeth AS ± SD *	Average number of conservatively repaired teeth AS ± SD*
Dec.1, 2022	2021–Nov. 30,	8.64 ± 5.91	4.64 ± 5.23	3.71 ±. 61
Dec.1. 2023	2022-Nov.30.	8.82 ± 6.06	5.49 ± 5.32	3.68 ± 3.04
Dec.1. 2024	2023–Nov. 30.	9.48 ± 4.77	5.18 ± 4.41	4.29 ± 3.20
Total		9.04 ± 5.56	$5.23 \pm 5.05 **$	3.09 ± 3.24

*AS \pm SD—arithmetic mean \pm standard deviation;

** significantly more than the average number of conservatively repaired teeth (p = 0.007)

Tooth extraction / Surgical extraction of impacted wisdom teeth / Apicoectomy



Figure 3. Oral surgical interventions performed under general anesthesia



> 5 teeth 5-10 teeth < 10 teeth

Figure 4. Distribution of the number of teeth for rehabilitation under general anesthesia in analyzed group of patients

Discussion

It is not a rare case that dental treatments for people with special needs is a big challenge in dental practice. Due to the numerous barriers that dentists encounter in working with this population, it is often impossible to perform a dental examination of the patient and radiological imaging to establish a diagnosis and determine and provide adequate therapy. On the other hand, these patients seek help from a dentist in the stage of advanced oral diseases, accompanied by numerous complications including pain and swelling and at the point where emergency treatment is the treatment of choice. When this is the case, restoration of a larger number of teeth is generally indicated. Due to the nature of the underlying disease, a tooth restoration in outpatient settings is often impossible, and these patients are treated dentally under general anesthesia, which entails a radical approach to the therapy of oral diseases, and tooth extraction is often the only therapeutic option. For the above-mentioned reason, the aim of this study was to analyze the dental treatment of people with special needs, provided under general anesthesia at the Clinic for Dental Medicine in Niš during a period of three years, with a special focus on the oral surgical treatment of these patients.

The results obtained in this study indicate a poor state of dental health within the population involved in the study, where each analyzed patient had an average of 9.04 ± 5.56 teeth restored under general anesthesia, with than significantly more extracted conservatively restored teeth. In addition, in as many as 21.77% of patients, only tooth extraction was performed without conservative rehabilitation. About 31% of the examined patients had more than 10 teeth repaired under general anesthesia. Such results confirm that even in our community, the help of a dentist is sought at the moment when urgent surgical treatment is indicated, when tooth extraction is the only therapeutic option and when it is necessary to restore a large number of teeth.

The study found that the average age range of the examined patients was $29.31 \pm$ 5.59 and that the largest number of subjects belonged to the age group between 21 and 30. Taking into account the results obtained by the study that a high percentage of extracted teeth were registered in this group of respondents, it can be concluded that people with special needs face significant teeth loss very early and/or often are completely toothless, with poor chances for an adequate prosthetic rehabilitation. Some other authors also came to this cnclusion^{11–13}. Generally speaking, such results do not come as a surprise; on the contrary, they are expected. In the group of patients with special needs, a high plaque index and solid dental plaque index are often present as the main indicators of poor oral hygiene as the main etiological factor of caries and gingival-periodontal diseases^{14,1}

On the other hand, orthodontic anomalies in this group are very frequent¹⁶. Apart from this, numerous factors such as the impossibility of performing oral hygiene, the use of various drugs that affect the flow of saliva, the specifics of the diet and lifestyle of these people, the fact that their guardians are mainly focused on dealing with basic health problems explain the fact that oral health care remains neglected $^{17-20}$. To all this, we should add the above-mentioned barriers regarding the adequate assessment of these patients at the primary level of dental health care and the unavailability of specialized services that would prevent the occurrence of oral diseases, i.e., timely therapeutic action to preserve the oral health of this group of patients. Furthermore, a significant problem is the patients with special needs' incapacity to cooperate with the dental team, which makes it difficult to carry out a routine examination and diagnosis of oral diseases. One more fact that should be mentioned is the radiological imaging of these patients which is difficult or even impossible. Therefore a tooth extraction is the therapeutic procedure of choice even when it comes to teeth in the frontal region²¹ In this study, only two teeth required apicoectomy during the observed period. However, it is likely that this number would have been significantly higher if orthopantomogram imaging had been performed for each subject.

Notwithstanding previously mentioned, there is some optimism in the fact that many dentists believe that the dental treatment of people with special needs is difficult, but worthy, and that a prevailing percentage of dentists show emotional concerns during the dental treatment of people with special needs^{22,23}. Therefore, it is very important that at the primary level people with special needs have access to dental care and to insist on early

diagnosis of oral diseases in this population and timely therapy of oral diseases. This seems to be the only way to avoid the early loss of a large number of teeth people with special needs often face and to improve their quality of life related to oral health.

Conclusion

Very few people with special needs have access to primary dental care. In addition, there is a lack of specialized dentists and dental practices that would provide dental services to this population without any obstacles. Moreover, in our region, the biggest portion of these people are in institutional custody. For this reason, people with special needs undergo dental care mainly in the institutions at the tertiary level of dental health care, where, due to the patient's incapacity to cooperate and the large number of associated diseases they have, a tooth restoration is performed under general anesthesia followed by the extraction of a large number of teeth. Therefore, one of the optimal solutions that could be considered is the inclusion of these people in dental monitoring and programs, which would systems significantly facilitate the management of dental problems among these patients and reduce or nearly completely exclude the possibility of urgent dental treatments and dental rehabilitations of these patients under general anesthesia.

Conflicts of Interest

The authors declare that they have no conflict of interest.

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