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THE PARTICIPATION OF PEDIATRIC DENTISTS IN ORAL HEALTH PROMOTION AND EDUCATION IN SERBIA

VLOGA OTROŠKIH ZOBOZDRAVNIKOV V PROMOCIJI USTNEGA ZDRAVJA IN V IZOBRAŽEVANJU O NJEM V SRBIJI

Biljana KILIBARDA [1*], Ana VUKOVIĆ [2], Evgenija MARKOVIĆ [3], Tamara PERIĆ [2], Bojan PETROVIĆ [4], Vladimir CAKAREVIĆ [5], Stevo MATIJEVIĆ [6], Dejan MARKOVIĆ [2]

[1] Institute of Public Health of Serbia Dr Milan Jovanovic Batut, Department for Monitoring and Prevention of Risk Behaviour, Milke Grgurove 5, 11000 Belgrade, Serbia
[2] Clinic for Pediatric and Preventive Dentistry, School of Dental Medicine, University of Belgrade, Belgrade, Serbia
[3] Clinic of Orthodontics, School of Dental Medicine, University of Belgrade, Belgrade, Serbia
[4] Department of Pediatric and Preventive Dentistry, Dentistry Clinic of Vojvodina, Faculty of Medicine, University of Novi Sad, Novi Sad, Serbia
[5] Ministry of Health Republic of Serbia, Belgrade, Serbia
[6] University of Defense, Faculty of Medicine of the Military Medical Academy, Clinic of Stomatology, Belgrade, Serbia

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ABSTRACT

Objectives: To identify the involvement of Serbian paediatric dentists in oral health promotion and education, and to propose further actions for the improvement of these activities.

Methods: This is an analysis of data collected by a cross-sectional, questionnaire-based survey of 445 dentists involved in the provision of dental health services to children at the primary healthcare level. We explored dentists' involvement in oral health education and promotion and the cooperation with other health professionals at the healthcare centre and the community level as well as their attitudes towards the importance of some factors influencing their work.

Results: Dentists estimate their cooperation with different services with ratings higher than 3 on the scale of 1 to 5. They reported the highest satisfaction in cooperation with paediatric services for preschool and schoolchildren (4.0±1.0). At the community level, they reported excellent cooperation with kindergartens (4.4±0.8), while collaboration with Roma health mediators (3.14±1.34) and nongovernmental organizations (2.5±1.4) received lower ratings. According to the average rating (4.7±0.7), dentists perceive the motivation of patients and/or their guardians for keeping good oral health as the factor with the highest importance for the quality of interventions they provide.

Conclusions: Dentists involved in the provision of dental healthcare for children and adolescents in primary healthcare centres in Serbia participate in different oral healthcare education and promotion activities in the community, and highlight the importance of strengthening cooperation with healthcare and other professionals and services aimed at vulnerable population groups, both within the health sector and nongovernmental organizations.

Keywords:
Paediatric dentists
Oral health
Promotion

IZVLEČEK

Cilji: *Ugotoviti vključenost srbskih pediatričnih zobozdravnikov v promocijo in izobraževanje o ustnem zdravju ter predlagati nadaljnje ukrepe za izboljšanje teh dejavnosti.*

Metode: *Gre za analizo podatkov, zbranih s presečno anketo na podlagi vprašalnika, posredovanega 445 zobozdravnikom, ki izvajajo storitve ustnega zdravja otrok na primarni ravni zdravstvenega varstva. Raziskovali smo vključenost zobozdravnikov v izobraževanje in promocijo ustnega zdravja ter sodelovanje z drugimi zdravstvenimi delavci na ravni zdravstvenega doma in skupnosti ter njihov odnos do pomembnosti nekaterih dejavnikov za njihovo delo.*

Rezultati: *Zobozdravniki sodelovanje z različnimi službami ocenjujejo z ocenami, višjimi od 3 na lestvici od 1 do 5, najboljše sodelovanje pa imajo s pediatrično službo tako za predšolske kot šolske otroke (4,0 ± 1,0). Po oceni zobozdravnikov na lestvici od 1 do 5 na ravni skupnosti najbolje sodelujejo z vrtci (4,4 ± 0,8), najslabše pa z romskimi zdravstvenimi mediatorji (3,1 ± 1,3) in nevladnimi organizacijami (2,48 ± 1,37). Glede na povprečno oceno (4,7 ± 0,7) je zobozdravnik motivacijo pacientov in/ali njihovih skrbnikov za ohranjanje dobrega ustnega zdravja ocenil kot najpomembnejši dejavnik kakovosti izvajanih posegov.*

Zaključki: *Ugotovitve našega dela kažejo, da zobozdravniki, ki nudijo storitve ustnega zdravja otrokom v domovih primarnega zdravstvenega varstva v Srbiji, sodelujejo v različnih aktivnostih v skupnosti ter opozarjajo na pomen krepitve sodelovanja s službami, namenjenimi ranljivim skupinam prebivalstva, in nevladnimi organizacijami.*

Ključne besede:
otroški zobozdravniki
ustno zdravje
promocija

***Correspondence:** Kilibarda_b@yahoo.com

1 INTRODUCTION

Oral diseases affect close to 3.5 billion people worldwide, including more than half a billion children suffering from caries of primary teeth (1). Dental caries is a public health problem, especially in low- and middle-income countries and vulnerable populations (2). Children's oral health is a significant public health issue due to the potentially negative impact of dental caries on the functional, psychological, and social dimensions of their well-being (3). Despite evidence of its importance from the public health perceptive, children's oral health is a low-priority issue in many countries (4).

Recent research indicates the association of economic macro-level factors with early the prevalence of childhood caries and their lack of treatment (5). Community and family factors play an important role in preserving and enhancing children's health. The integration of oral health policies and empowering communities is essential for the improvement of children's health in general, including oral health (6). Community-based, public health approaches (7), which are emphasized in the Ottawa Charter developed by the World Health Organization, are of great importance for oral health promotion (8). The Resolution (WHA74.5) of the WHO calls for the integration of oral health within national policies and emphasizes the importance of preventive approaches, including oral health promotion as well as intersectoral work and addressing the key risk factors of oral diseases (9).

Oral health education and promotion interventions are found to be effective (10), but there remain differences in their effectiveness (11). While evidence from some studies shows that dentists recognize the importance of preventive dentistry and its benefits for the community (12), some barriers and facilitators influence the effectiveness of oral health promotion in dental practice (13). Cooperation with schools, professional groups, social organizations, and other partners is of great importance for the successful implementation of oral health programmes (14).

Dentists' participation in oral health promotion on individual and community levels is important, as they can contribute to the advocacy of evidence-based interventions for tackling various risk factors common to other non-communicable diseases. Given the crucial role of paediatric dentists in oral health promotion, it is important to establish cooperation with other healthcare professionals and representatives.

Over the past two decades, the oral healthcare systems of the Balkan countries have changed significantly (15). In Serbia, a middle-income country in the Western Balkans, there were changes in the provision of oral health services to adults, but dental healthcare services remained fully available to children and students, including preventive services, and these are provided by dentists with or without specialization in preventive dentistry. According to legislation, oral health interventions, both curative and preventive, are covered by the Health Insurance Fund for specific groups in Servia, including preschool, school children and students up to 26 years of age, pregnant and one-year postpartum women, patients with special needs, and those with severe medical conditions. Both individual and group oral health education is recognized and covered for these groups, and the frequency and content are defined by the related bylaw (16). Despite improvements, oral diseases, and particularly dental caries, remain a major oral health problem in Serbia. The recent data show that only 36% of 12-year old children and 22% of 15-year old children were caries-free. (17) Thus, to optimize the oral health of all children, community-based, public health approaches are necessary.

There has been a long tradition of oral health promotion in Serbia, and both legal and strategic health documents support the implementation of these activities. In addition, there has been a long tradition of oral health implementation in the awareness-raising campaign National Week of Oral Health (NWOH), with differences in the frequency and quality of these activities across the country. Data on the number of activities conducted through a network of institutes of public health are collected by the Institute of Public Health of Serbia, but there are no studies that confirm how these activities are reflected in the oral health status of Serbian children. The individual and collective involvement of dentists in primary care settings is also unknown. Dentists routinely have a major role in oral health promotion in clinical and non-clinical settings. They can offer advice and support, and work to motivate, educate and promote healthier behaviours in their patients, but the extent of these activities is not clear. We hypothesized that dentists` participation in oral health promotion in clinical and non-clinical settings, and their inter-sectoral and multi-sectoral cooperation with other health and social services, varies across the country.

This study thus aims to identify the involvement of Serbian paediatric dentists in oral health promotion and education, their motivation and any factors they perceive as important in this context, and to propose further actions for the improvement of these activities. The findings of this study should contribute to a better understanding of oral health promotion in the Western Balkans, as such information is currently lacking (15), and to the best of our knowledge has been rarely explored through quantitative surveys on a large sample of dentists.

2 METHODS

This is an analysis of data collected by a cross-sectional, questionnaire-based survey conducted among dentists who provide dental care for children and adolescents employed in primary healthcare institutions in Serbia. Before the completion of the survey, all dentists were informed that participation was voluntary and informed consent was obtained. The survey was approved by the Ethical Committee of the School of Dentistry the University of Belgrade.

2.1 Survey instrument

The questionnaire comprised four parts: 1) questions about the dentists' level of education, the average number of patients, and the percentage of working hours dedicated to oral health promotion, preventive and therapeutic procedures: 2) satisfaction with work conditions, level of communication with patients and parents, and communication with colleagues: 3) provision of other services within primary health-care, and institutions at the community level: 4) continuous education services, and the availability of dental materials.

Dentists' involvement in oral health education and promotion activities, as well as their cooperation with other healthcare professionals at the healthcare centres, were rated. Multi-sectoral collaboration with various partners/institutions in the community was analysed. Dentists` self-perceived level of cooperation with different services was rated on a scale of 1 (no cooperation at all) to 5 (excellent cooperation). The importance of some factors influencing the work of dentists was also rated on a scale of 1-5.

Before data collection, the questionnaire was pre-tested by ten dentists to ensure that the questions were easy to understand and in line with their scope of work.

2.2 Data collection

Data collection was conducted during September and October 2019. The questionnaires in paper form were sent to the directors of 158 primary healthcare centres in Serbia (paediatric dentistry wards in the healthcare centres, and schools with dental offices) to distribute them among dental practitioners providing dental services to preschool and schoolchildren. Each completed questionnaire was returned in a closed envelope.

2.3 Ethical approval

The questionnaire and data collection were conducted within the project approved by the Ethics Committee at the University of Belgrade School of Dental Medicine (document 36/10), and supported by the Ministry of Health of the Republic of Serbia. An anonymized database was used for this analysis. Before the completion of the survey, all dentists were informed that participation was voluntary and informed consent was obtained.

2.4 Statistical analysis

Data were analysed using SPSS software version 20. Descriptive statistics were used, and depending on the variables and data type, the results were presented as either the frequencies (percentages) or mean ± standard deviation (SD). Statistical differences were assessed using the x2-test, t-test, and Tukey test. The level of significance was set at $p \leq 0.05$.

3 RESULTS

In total, feedback from 102 out of the 158 invited primary healthcare centres was received. Four hundred forty-five dentists that provide dental services to children and adolescents completed the questionnaire. Among these, 35% were specialists in paediatric dentistry.

As shown in the table below, the average number of paediatric patients per week, as well as the number of preventive and therapeutic services provided per dental practitioner, showed great variations. On average, dentists dedicated 42.7% of their working hours to preventive work (Table 1).

Table 1. The average number of patients, working hours allocated to preventive services, and years of working experience, Serbia, 2019.

Independent variables	Dentist (n=445)	
	(mean±sd)*	Median (min-max)
Number of patients per week	80.0±33.9	75 (12-364)
Number of patients to whom dental treatment services were provided per week	43.8±26.9	40 (0-263)
Number of patients to whom preventive services were provided per week	47.9±37.7	40 (0-305)
Percentage of working hours dedicated to preventive services per week	42.7±19.0	40 (0-100)
Years of experience working in paediatric dentistry	15.2±9.2	15.0 (0.2-38.0)

*Except for working hours dedicated to preventive services per week, presented in percentages

Dentists rated the importance of factors that might be related to the quality of their work. According to the average rating of 4.68±0.69, dentists rated the motivation of patients and/or their guardians with regard to keeping good oral health as the factor with highest importance for the quality of the interventions they provide. The availability of high-quality treatment materials (4.21±0.96) was rated as the factor with the lowest importance. With ANOVA analysis we determined statistically significant differences in the average importance of the explored factors (F=24.00; p<0.001). A pairwise comparison with the Tukey test showed that the importance of job satisfaction as a factor was significantly less than that of communication with patients or their guardians (p=0.000), or satisfaction with communication within the dental team (p=0.002). In addition, motivation was significantly more important for the quality of work compared to the availability of dental materials (p=0.000).

There were no statistically significant differences in attitudes towards different factors between general dentists and specialists in paediatric dentistry. The Tukey test for pairwise comparison showed that dentists with more than 20 years of experience gave satisfaction in communication within the dental team statistically higher ratings for importance compared to dentists with less work experience (p=0.028) (Table 2).

A high percentage of dentists had participated in health education and promotion activities, regardless of whether they are specialists in paediatric dentistry or not. A statistically significant difference (p<0.05, chi-square test) was found in the participants' presence in the media, and specialists were more involved in communication with the public via the media (Table 3).

Table 2. The rating of factors influencing the quality of work in paediatric dentistry, Serbia, 2019.

Factors	Total sample n=445	Specialist in paediatric dentistry			Years of experience working in paediatric dentistry			
		Yes	No	P*	<=10	10 -20	>20	P**
Time available for the patient	4.23±1.03	4.20±1.04	4.30±1.00	0.29	4.30±0.98	4.19±1.08	4.21±1.03	0.630
Dentists' job satisfaction	4.43±0.90	4.41±0.94	4.49±0.81	0.4	4.45±0.90	4.34±0.99	4.56±0.76	0.151
Quality of communication with the patient/parent/guardian	4.67±0.65	4.65±0.67	4.69±0.62	0.43	4.66±0.67	4.59±0.74	4.76±0.53	0.131
Patient/parent/guardian motivation for the improvement of oral health	4.68±0.69	4.64±0.74	4.76±0.59	0.09	4.65±0.75	4.67±0.72	4.72±0.60	0.690
Availability of treatment materials	4.21±0.96	4.19±0.97	4.26±0.93	0.44	4.26±0.90	4.17±1.04	4.17±0.96	0.684
Quality of communication within the dental team	4.44±0.87	4.45±0.88	4.45±0.81	0.96	4.50±0.79	4.30±1.01	4.58±0.67	0.023[b]

[a]1 – not at all important; 5 – very important; * t test of independent samples; **ANOVA; [b] Tukey test

Table 3. Dentists' participation in oral health education and promotion activities (excluding individual counselling during the oral health interventions), Serbia, 2019.

Participation in oral health promotion activities in the community		Total sample N = 445 %	General dentists	Specialist in paediatric dentistry
National Week of Oral Health	No	4.9%	5.0%	4.0%
	Yes	95.1%	95.0%	96.0%
Educations in schools	No	4.6%	3.7%	5.6%
	Yes	95.4%	96.3%	94.4%
Education in preschool institutions	No	6.8%	7.6%	4.8%
	Yes	93.2%	92.4%	95.2%
Public events aimed to raise oral health awareness	No	41.6%	44.1%	37.0%
	Yes	58.4%	55.9%	63.0%
Cooperation with media (preparation of media statements, giving interviews, etc.)	No	56.7%	63.8%	44.4%
	Yes	43.3%	36.2%	55.6%*
Cooperation with local self-government, civil society organizations, or other partners	No	68.2%	71.2%	62.5%
	Yes	31.8%	28.8%	37.5%

*p<0.001

All dentists providing oral health services to children (both specialist and general dentists), estimated their cooperation with different services and partners with ratings higher than 3. They ranked their cooperation with paediatric services for preschool and schoolchildren with the highest rating. At the community level, cooperation with preschool institutions and schools was estimated with higher ratings than their cooperation with other partners, such as non-governmental organizations and media. There were no statistically significant differences in the self-perceived level of cooperation with services at the primary health centre and community level (Table 4).

Table 4. Dentists' estimation of the level of cooperation with different services within primary healthcare centres.

Cooperation with services/ institutions in a healthcare centre and the community		Total sample N=445		Not applicable	General Dentist	Specialist in paediatric dentistry
		($\bar{x}$ ±sd)	med	(%)	($\bar{x}$ ±sd)	($\bar{x}$ ±sd)
Primary healthcare centre	Counselling centre for children with developmental disabilities	3.7±1.2	4.0	12.5%	3.8±1.2	3.6±1.2
	Healthcare service for preschool children	4.0±1.0	4.0	1.7%	4.1±1.0	3.97±1.1
	Healthcare of schoolchildren	4.0±1.0	4.0	1.9%	4.1±0.9	3.9±1.1
	Women's health service	3.5±1.2	3.5	7.0%	3.6±1.2	3.4±1.2
	Adult healthcare	3.6±1.2	4.0	12.7%	3.6±1.2	3.5±1.1
	Team for children suffering from violence and neglect	3.4±1.3	3.0	49.2%	3.4±1.3	3.6±1.4
	Roma health mediators	3.1±1.3	3.0	51.8%	3.2±1.3	3.0±1.4
Institutions at the community level	Preschool Institution	4.4±0.7	5.0 (2-5)	3.4%	4.5±0.8	4.4±0.8
	Schools	4.4±0.8	5.0 (2-5)	1.2%	4.4±0.8	4.3±0.9
	Centres for social work	3.2±1.3	5.0 (1-5)	52.4%	3.2±1.3	3.0±1.2
	Local self-government	3.2±1.4	3.0 (1-5)	39.1%	3.4±1.4	3.1±1.4
	Non-government organizations	2.5±1.4	2.0 (1-5)	65.7%	2.5±1.4	2.4±1.3
	Media	3.1±1.2	3.0 (1-5)	36.6%	3.1±1.3	3.1±1.1

*p<0.001, [a] Rated at a scale of 1-5 (1 – very low or no cooperation, 5 – the highest possible communication) [b] Not Applicable – either no such organizational unit or team at their workplace exists, or services are not perceived as a potential partner in healthcare centres and at the community level.

4 DISCUSSION

Paediatric dentists in Serbia, apart from the provision of curative services and individual counselling, participate in various oral health promotional and educational activities. The findings of our study indicate variations in the number of patients and time allocated to preventive work. Dentists who provide oral health services to children at the primary healthcare centres spent on average less than half of their total working hours to prevention and promotion activities (42.7%). The motivation of patients and/or their guardians to maintain good oral health was perceived as the factor of highest importance for the quality of the dentists' work, and the availability of high-quality treatment materials was seen as the least important. Communication with patients or their guardians was recognized as a very important factor for successful outcomes, especially among dentists with more than 20 years of experience. The high level of cooperation between paediatric dentists and educational institutions (preschools and schools) was evident, whilst cooperation with services for children with special needs could be improved. We did not find any differences between general dentists and specialists in paediatric dentistry for the majority of factors explored within this study. This finding differs from the results in some other countries, and might be explained by the same working conditions and opportunities to receive additional education relevant to preventive dentistry for both general and specialist dentists in the current study (18).

Although further in-depth analysis is needed, these findings call for better cooperation and integration of oral

healthcare within primary care services, and for a better focus on vulnerable groups to achieve equity, which is also stressed by other research (19). The role of paediatricians in the prevention of dental caries is significant, and they should be encouraged to acquire knowledge on caries risk assessment and referrals (20). Better teamwork and closer relationships between paediatricians and paediatric dentists are mandatory, due to the recognized link between oral health and general health.

One of the first steps to achieving this aim is by providing interprofessional oral health practice and education (21). Our findings indicate the importance of proper communication at different levels, and this issue should be addressed in future projects.

The importance of the school environment and access to oral health promotions for all socio-economic classes is confirmed by many studies (22). According to our findings, there is great potential for delivering oral health education and practice in schools and preschool institutions in Serbia. As oral health professionals, paediatric dentists have the responsibility to use evidence-based knowledge as a guide to the development of social policies and practices. Additional efforts should be made to provide more effective preventive and educational practices to the public, and these practices should be consistent with the most recent scientific evidence (23). For better community-based interventions, the organization of collaborative activities between various stakeholders and health and education institutions are of great importance. As experts, paediatric dental health professionals should have an active role in multi- and intersectoral cooperation in oral health promotion. This cooperation should be used as a resource for advocating better integration of oral health and general health programmes. Uncoordinated implementation of programmes limits their full potential and could be a source of conflicting messages being delivered to the public (24).

Educational activities to underline the common risk factors for oral diseases, such as diet, smoking, and alcohol consumption, are also related to other non-communicable diseases and could be done in partnership with other professionals and partner organizations. Different sectors, including civil society organizations, could be involved in activities to reduce these risk factors. The WHO has been advocating for the concept-integrated approach to chronic disease prevention for some decades (25). However, research shows that intensive advocacy efforts are needed for adequate stakeholder support for the adoption and implementation of evidence-based oral health interventions (26). One of the opportunities to achieve this might be during awareness-raising campaigns and events such as National Oral Health Week (NOHW), and International Oral Health Day. While in middle-income countries community campaigns/events are not readily reported (27), the findings of this study show that almost all dentists who completed the questionnaire voluntarily participate in NOHW, which has been organized every year for the last 30 years (28).

The findings of our work also show that dentists who provide oral health services to children in primary healthcare centres in Serbia participate in different activities in the community, and highlight the importance of strengthening cooperation with services aimed at vulnerable population groups, such as Roma mediators and centres for social work. However, it should be taken into account that at some primary healthcare centres there are no Roma health mediators or teams in charge of responses to any reported child abuse. Oral health education and promotion should be aimed at the improvement of the motivation of patients and/or their guardians' to maintain good oral health, especially because the results highlight this as a factor as being of the highest importance for the quality of interventions they provide.

Research shows that paediatricians recognize their role in caries prevention but also need to strengthen their knowledge in this field (24). The well-established cooperation between paediatric dentists and health professionals from other services at the primary healthcare centres and with partners at the community level should be further used not only for oral health promotion, but for the prevention of risk factors common to non-communicable diseases. Dentists are in a good position to be strong advocates for the prevention of non-communicable diseases as they are involved in the provision of dental care to a great number of children and their parents, and often not in urgent situations. Issues related to cigarette smoking and vaping, diet, breastfeeding, and alcohol consumption could be discussed in dental offices, and in that way dentists can contribute to the prevention of oral and non-communicable diseases.

To the best of our knowledge, this is the among the first quantitative studies in the last decade that explore not only the number of services provided, but also oral health promotion and education activities among a large number of dentists that provide oral health services to children in Serbia.

The study has some limitations. Firstly, not all primary healthcare centres replied, but the response rate at primary healthcare centres (102 out of 158 or 64.5%) can be considered solid. Secondly, as there was no random selection (as there was no sample frame of all dentists involved in providing dental services to children), the sample cannot be considered representative. However, as the total number of paediatric dentists in Serbia is 332 (out of total number of 1,596 dentists in Serbia as of December 31st 2019) (29) and the number of dentists who provide services to children is not officially known, we presume that the sample size of 445 dentists is sufficient

for getting valuable information. As the questionnaire was developed for the purposes of assessing the situation, including gaps and barriers with regard to planning a national preventive oral health programme, apart from pretesting the survey instrument, further validity and reliability tests were not done. Lastly, despite the voluntary participation and confidentiality of the answers, social desirability bias cannot be ruled out. It should also be taken into account that despite being in a good position for oral health promotion and with background training in education, the involvement of paediatric dentists in oral health promotional activities is difficult to determine objectively, since there is no protected and allocated time for such activities.

5 CONCLUSION

Dentists providing healthcare services for children and adolescents reported a high rate of participation in oral health education and promotion activities at the workplace and in the community. The quality of communication with patients was the key factor influencing their satisfaction at the workplace. Available time and motivation were perceived as significantly more important factors for the quality of dentists' work. These results suggest that together with the development of collaboration with co-workers, sharing skills, resources, and duties, and having systemic support, it is important for dentists to focus on further strengthening of their communication skills in order to motivate parents and children for an active role in maintaining oral health. Furthermore, it would be beneficial to develop mechanisms that would contribute to achieving the appropriate balance between curative and preventive services, and reduce existing differences among dentists' participation in preventive work and oral health promotion across the country.

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CONFLICTS OF INTEREST

The authors declare that no conflicts of interest exist.

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ETHICAL APPROVAL

The questionnaire and data collection were conducted within the project approved by the Ethics Committee at the University of Belgrade School of Dental Medicine (document 36/10).

AVAILABILITY OF DATA AND MATERIALS

The database is available with an official request submitted to Prof. Dejan Markovic, project leader.

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