

PATIENT SATISFACTION WITH DENTAL HEALTH CARE DURING THE COVID-19 OUTBREAK IN SERBIA

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Abstract: Introduction: The COVID-19 virus belongs to the group of respiratory viruses. Due to the nature of their work, dentists are at greater risk of contracting the new coronavirus during dental interventions. Knowing the path of transmission of the virus is of great importance in preventing and suppressing the development of infection. Patients' fear of infection during the coronavirus pandemic was significant, and because of this, visits to the dentist for standard dental services were postponed, and patients came only for emergencies. Adherence to protective measures directly affected patients' satisfaction with dental services.

The aim of this work was to examine patient satisfaction with dental services during the coronavirus pandemic.

Materials and Methods: The study was designed as a cross-sectional study using an epidemiological questionnaire. A total of 120 patients were surveyed, 60 from private practice and 60 from the state sector. The questionnaire was anonymous and contained sociodemographic questions and questions related to knowledge of protocols and satisfaction with dental services. The data were processed in the SPSS 11.5 program.

Results: Out of 120 respondents with an average age of 38.92 ± 13.08 years, 98% were familiar with the protocol for protection against the coronavirus. There were no dissatisfied people in either private practice or the public sector; the only difference was in the degree of satisfaction. In private practice, more respondents were very satisfied as the highest level of satisfaction, while in the public sector, it was very satisfied.

Conclusion: A good knowledge of the protocol for protection and prevention of the spread of the virus raises awareness among dentists and patients. By following these measures, infection with the virus is re-

duced to a minimum, and therefore patient satisfaction with dental services is at a higher level.

Keywords: COVID-19, patient satisfaction, dentistry.

INTRODUCTION

Ensuring quality and safe health care during the COVID-19 pandemic was a challenge, especially in low and middle-income countries such as Serbia. In the Republic of Serbia, the first case of COVID-19 was reported on March 6, 2020, and more than 2.5 million cases have been detected so far, with the outbreak still ongoing (1).

The SARS-CoV-2 virus can spread through the inhalation of respiratory droplets from an infected individual (including aerosols generated through sneezing, coughing, speaking, singing, or breathing) or through direct contact with infected droplets through the eyes, mouth, or nose (2). Aerosol-generating procedures in dental health care can increase the risk of virus transmission, with dentists being on the front-line of infection (3). Due to the risk of infection for both dental healthcare workers and patients, additional COVID-19 infection control measures were strongly recommended for all patients when providing dental healthcare (4).

Patient satisfaction is an indicator of healthcare quality and effectiveness of healthcare services, and, as such, it is commonly used for measuring the quality of dental healthcare. The services provided by healthcare workers, good and efficient communication, and the willingness to provide medical measures play major roles in patient satisfaction (5). Measuring patients' satisfaction with dental interventions defines the quality of services provided, thus encouraging better work

in healthcare institutions. In this way, various deficiencies can be identified to improve the level of services in health institutions.

As a highly contagious disease, coronavirus required enhanced protection measures to prevent its spread (6, 7). The protection protocol was clearly defined and related to the wearing of protective equipment by dentists and patients, improved hygiene and disinfection, as well as adequate social distancing (8).

During the pandemic, the healthcare service system faced changes, causing different perceptions about the quality of interventions and, consequently, patient satisfaction (6). Therefore, it is necessary to immediately notice and remedy dissatisfaction factors to ensure the level of patient satisfaction remains high or even improves.

Apart from enhanced protection measures in dental offices, the fear of contracting the virus and the fear of dentists among patients greatly influenced the decision to seek dental services. In addition, the level of visiting patients' awareness of healthcare compliance to prevent the spread of the new coronavirus was important for the timely provision of dental services (9). In a clinical sense, it is essential to assess patient satisfaction with healthcare services during the COVID-19 pandemic, as the pandemic is expected to have reduced adherence to regular dental attendance and follow-up examinations and shifted focus to dental emergencies only (8, 9). Professional literature shows dental centers suffered damage during the pandemic due to neglected basic dental services.

In our country, several COVID-19-related studies were conducted about recommendations and the impact of the pandemic on the general population's health. Our study is the first to examine the satisfaction of patients in the public sector, which includes a wide population, as well as private practice.

This paper aims to examine patient satisfaction with dental services based on the protection protocol during the coronavirus pandemic.

MATERIAL AND METHODS

We performed a cross-sectional study of patients aged 18 years and older attending the Clinic of Dental Medicine and private healthcare facility, Implant Rendgen centar, in the city of Niš, situated in South-eastern Serbia. The study was approved by the Ethics Committee of the Clinic for Dental Medicine in Niš under number 14/14-2019 EO.

In 2022, Niš had a population of **249 816** inhabitants in an area of 596.71 km². The study was carried out from February 1 to February 28, 2023. To adjust for the COVID-19 pandemic, we categorized visits after March 6, 2020, when the first case in Serbia was

reported, as the COVID-19 period. The required information for the study was collected in face-to-face interviews with patients carried out by trained interviewers. The questionnaire contained 21 items and was divided into two parts: the respondents' sociodemographic characteristics and a patient satisfaction structured questionnaire adapted from previous publications and developed for this purpose (10, 11).

The patient satisfaction questionnaire consisted of 14 statements regarding various aspects of satisfaction. Of these statements, eight were close-ended questions, and six were to be scored on a five-point Likert scale to evaluate the patient satisfaction level from strongly disagree = 1 to strongly agree = 5. Closed-ended questions related to patient's familiarity with the protocol and protection against virus transmission, presence of fear of infection in dental centers, fear as a motivation for better oral hygiene, adequate workplace hygiene, whether dentists had prescribed protective equipment in place, whether adequate disinfection between patients was ensured, as well as whether the enhanced measures should continue to be applied (Table 1).

The study included 128 patients, of whom 66 were from the private sector and 62 were from public healthcare, and adequate responses were received from 120 individuals.

Patients were informed about the goals and procedures of the research and agreed to participate in the study. The authors followed the World Medical Association Declaration of Helsinki.

Collected data were statistically analyzed using SPSS 11.5 for Windows (SPSS Inc., Chicago, IL, USA). Descriptive statistics were computed for all variables. Mantel-Haenszel's chi-square test was used to compare frequencies of categorical variables between the two groups. Statistical significance was set at a level of 0.05.

RESULTS

The study included 128 patients, of whom 66 were from the private sector and 62 were from public healthcare, and adequate responses were received from 120 individuals.

The examined sample (n = 120) comprised 56 males (46.5%) and 64 females (53.5%). The average age of the respondents was 38.92 ± 13.08 years (range: 18-58). More than four-fifths of the respondents were from the city (83.3%), and a smaller number lived in rural areas (16.7%). The most significant number of respondents had university and college education (53.3%), followed by secondary education (44.2%), while as few as 2.5% had only primary education. In addition, the sample was dominated by employed people, namely 93 individuals or 77.5% (Table 2).

Table 1. Questionnaire of patient satisfaction

1.	Date of birth? _____
2.	Survey date? _____
3.	Gender? a) Male b) Female
4.	Education? a) Primary b) Secondary c) College and university
5.	Place of living? a) Rural area b) City
6.	Live in Serbia? a) Yes b) No
7.	Employment status? a) Employed b) Unemployed c) Retired
8.	Are you familiar with the protocol? a) Yes b) No
9.	Chosen physician a) Private sector b) Public sector
10.	How many times did you brush your teeth? a) None b) 1-2 times a day c) 3-4 times a day
11.	How many check-ups did you have during the pandemic? a) None b) 1-2 times c) 3-4 times d) Only in emergencies
12.	Was the mouth disinfected before the intervention? a) Yes b) No
13.	Was the fear of the virus a motivation for better hygiene behavior? a) Yes b) No
14.	Did the doctors have adequate protection in place? a) Yes b) No c) Partly
15.	Was the work area well disinfected? a) Yes b) No
16.	What was the patient appointment schedule like? a) Poor b) Good c) Excellent
17.	Did the patients use protection against the virus? a) Yes b) No
18.	Were you afraid of getting infected in the office? a) Yes b) No
19.	Did you need emergency dental intervention while you were infected with the virus? a) Yes b) No
20.	Should enhanced protection measures continue to be applied? a) Yes b) No c) Partly
21.	How satisfied are you with dental interventions during the pandemic?? a) Dissatisfied b) Satisfied c) Moderately satisfied d) Very satisfied

Table 2. Demographic characteristics of respondents

Variable		N	%	statistics
Gender	Males	56	46.5	$\chi^2 = 0.533$ df = 1 p = 0.465
	Females	64	53.5	
Education	Primary	3	2.5	$\chi^2 = 52.85$ df = 2 p = 0.000
	Secondary	53	44.2	
	College and university	64	53.3	
Place of living	Rural area	20	16.7	$\chi^2 = 53.333$ df = 1 p = 0.000
	City	100	83.3	
Employment status	Employed	93	77.5	108.95 df = 2 p = 0.000
	Unemployed	22	18.3	
	Retired	5	4.2	
Age	18-24	17	14.2	$\chi^2 = 8.333$ df = 3 p = 0.0396
	25-34	31	25.8	
	35-44	34	28.3	
	45+	38	31.7	

Table 3. Satisfaction with services by sociodemographic characteristics

Variable	Category	Satisfied (n, %)	Moderately satisfied (n, %)	Very satisfied (n, %)	Statistics
Gender	Males	23 (41.1)	20 (35.7)	13 (23.2)	$\chi^2(1) = 1.165$ p = 0.559
	Females	23 (35.9)	29 (45.3)	12 (18.8)	
Education*	Primary	2 (66.7)	1 (33.3)	0	$\chi^2(1) = 0.596$ p = 0.7422
	Secondary	20 (37.7)	20 (37.7)	13 (24.5)	
	College and university	24 (37.5)	28 (43.8)	12 (18.8)	
Place of living	Rural area	13 (65.0)	3 (15.0)	4 (20.0)	$\chi^2(1) = 8.383$ p = 0.0151
	City	33 (33.0)	46 (46.0)	21 (21.0)	
Employment status	Employed	36 (38.7)	40 (43.0)	17 (18.3)	$\chi^2(2) = 2.3871$ p = 0.665
	Unemployed	8 (36.4)	8 (36.4)	6 (27.3)	
	Retired	2 (40.0)	1 (20.0)	2 (40.0)	
Age	15-24	9 (52.9)	6 (35.3)	2 (11.8)	$\chi^2(3) = 5.771$ P = 0.449
	25-34	8 (25.8)	13 (41.9)	10 (32.3)	
	35-44	14 (41.2)	15 (44.1)	5 (14.7)	
	45+	15 (39.5)	15 (39.5)	8 (21.1)	

The results referring to the respondents' answers and the differences in distribution among them are given in Table 3.

Gender, age, education, and employment status did not affect respondents' satisfaction with the dental services provided. The only sociodemographic characteristic by which the respondents differed statistically significantly in terms of satisfaction with the services provided is the place of living. Respondents living in rural areas were more often "satisfied" (the lowest registered degree of satisfaction) - 65%. At the same time, they were less often "moderately satisfied," 15%, compared to 46% of respondents living in

the city. In the "very satisfied" category (the highest degree of satisfaction), the responses of respondents from rural areas did not differ from those of respondents from the city.

Patient responses to questionnaire questions affecting satisfaction are shown in Table 4

With regard to satisfaction with the dental services provided in the private and public sectors, there are no dissatisfied patients. Satisfied patients are almost equal in number, with the only difference being that there are more very satisfied patients in the private sector and more moderately satisfied patients in the public sector (Figure 1).

Table 4. Patient satisfaction structured questionnaire

Question number	Questions and answers	Number of answers: (%)
1.	Are you familiar with the protocol? Yes No	118 (98) 2 (2)
2.	Was the fear of the virus a motivation for better hygiene behavior? Yes No	33 (27.5) 87 (72.5)
3.	Did the doctors have adequate protection in place? Yes Partly	118 (98.3) 2 (1.7)
4.	Was the work area well disinfected? Yes No	119 (99.2) 1 (0.8)
5.	Did the patients use protection against the virus? Yes No	111 (92.5) 9 (7.5)
6.	Was the mouth disinfected before the intervention? Yes No	78 (65) 42 (35)
7.	Were you afraid of getting infected in the office? Yes No	29 (24.2) 91 (75.8)
8.	What was the patient appointment schedule like? Poor Good Excellent	2 (1.7) 73 (60.8) 45 (37.5)
9.	How many check-ups did you have during the pandemic? None 1-2 times 3-4 times Only in emergencies	25 (20.8) 60 (50) 17 (14.2) 18 (15)
10.	Should enhanced protection measures continue to be applied? Yes No Partly	44 (36.7) 28 (23.3) 48 (40)
11.	Chosen physician Private sector Public sector	60 (50) 60 (50)
12.	How many times did you brush your teeth? b) 1-2 times a day c) 3-4 times a day	116 (96) 4 (4)
13.	Did you need emergency dental intervention while you were infected with the virus? a) yes b) no	10 (10) 110 (90)
14.	How satisfied are you with dental interventions during the pandemic?? b) satisfied c) moderately satisfied d) very satisfied	46 (38.3) 49 (40.8) 25 (20.8)

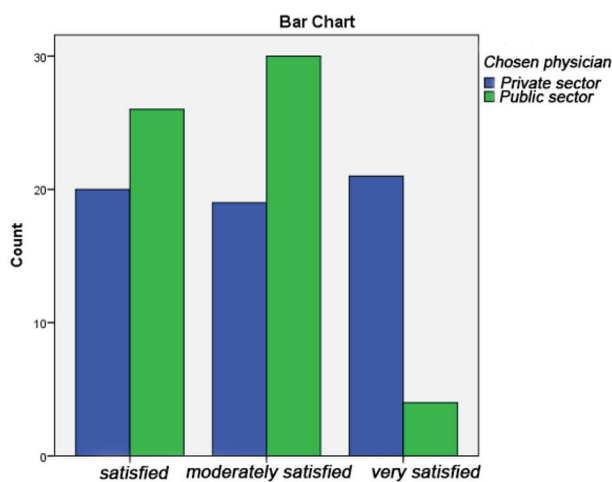


Figure 1. Distribution of satisfaction in the private and public sectors

DISCUSSION

The oral cavity has diverse microbiota harboring numerous species of bacteria participating in the protection of systemic health. It is also the initial part of two systems - digestive and respiratory - and thus the entrance for pathogenic microorganisms (11).

Complications of untreated tooth and periodontal diseases may disrupt the entire body's immune system and cause serious diseases (12). During the coronavirus pandemic, the fear of infection increased awareness of and concern about the health status of the entire population. The imperative was to improve the disinfection and hygiene of the workspace, ensure better protection of dentists, and reduce waiting room crowding, which minimized the possibility of virus spread (13).

A large number of studies have been carried out by surveying dentists around the world since all countries were affected by the pandemic (COVID-19 virus). In contrast, very few studies examined patients' satisfaction with services and knowledge of virus transmission and protection. Compliance with protocols by dentists results in higher patient satisfaction with services (14).

Factors affecting patient dissatisfaction include medical staff qualifications, work organization, and workplace cleanliness, especially during a pandemic. Patients' concerns about their health, especially among the elderly population, demand high-quality and impeccable dental services (15, 16).

In our country, communication with the population about virus transmission and protection protocols was mainly done through the public information system.

Nair et al. (16) report in their study that 98% of respondents had knowledge of the virus protection protocol. Their research result fully correlates with results in our research, where also 98% of respondents were familiar and only 2% were partially familiar with

the protection protocols. The high level of knowledge shows that the pandemic-related advice and measures issued by the World Health Organization and conveyed through the media contributed to good knowledge of infection control and spread.

In his study, SAAD A. (5) reports that of the total respondents, 55.3% had higher education and also a high satisfaction level (73.4%). In terms of education, the highest percentage of respondents in our study (53.3%) had higher education, of which 43.7% were moderately satisfied, 37.5% were satisfied, and 18.8% were very satisfied with the services. Of the 44.2% with secondary education, the number of satisfied and moderately satisfied respondents was equal (37.7%), while 24.5% were very satisfied. Only 2.5% of respondents had primary education, of which 66.7% were satisfied, and 33.3% were moderately satisfied. These results indicate that higher education may influence a higher degree of patient satisfaction.

In the study by Paravie and Osmani conducted in Iran, 65% of respondents were familiar with the protocol, and 43.5% and 47.1% of respondents with primary education and from urban areas, respectively, were satisfied with the services. The overall frequency of satisfaction was 39.3% high level, 45.2% medium level, and 15.2% low level of satisfaction (9). Compared to this study, a smaller percentage of respondents were familiar with the protocol, hence the lower percentage of high-level satisfaction. Also, in our study, there were more respondents from the city (83.3%), 33% of whom were satisfied, 46% were moderately satisfied, and 21% were very satisfied with the services provided, while there were no dissatisfied respondents. Respondents from rural areas reported a lower degree of satisfaction than those from the city, which result is also a consequence of less frequent visits to the dentist. The general conclusion is that respondents from rural areas were less satisfied with the services provided than respondents from the city. They were not dissatisfied, but their level of satisfaction was somewhat lower than that of respondents from the city.

Wardani et al. (13) report in their study that 64% of patients visited a dentist during the COVID-19 pandemic 1-2 times a year. The results are similar to our study, where 60% of patients visited dental offices 1-2 times a year.

N. Gutierrez-Marin notes in her study that 74.7% of respondents were very satisfied and only 0.4% were dissatisfied, which is the result most similar to that of our study. The only difference is that in this study, there were no dissatisfied patients (17).

N. Sandy et al. report that 60.1% of patients had a high level of satisfaction, 20.08% had a moderate level of satisfaction, and 19.32% had a low level of satisfaction (18).

Most studies that have investigated patient satisfaction report that patients are generally satisfied with services. The first thing they notice during a visit is the appearance of offices, cleanliness, tidiness, and organization of patient appointments, giving the impression that the services will also be at a high level. The kindness and empathy of dentists and staff are essential, as in this way, patients' fear is overcome, and their trust is gained, contributing to a higher degree of satisfaction. A lower degree of satisfaction reported in studies can only further motivate dentists to improve their workspace and the quality of services and, therefore, achieve higher patient satisfaction.

CONCLUSION

Patients treated during the COVID-19 pandemic in the dental health care system in Niš, Serbia, were very satisfied with their treatments. A good knowledge of patient protection protocols for the COVID-19 virus raises awareness among dentists and patients to take better care of their own and others' health. The study revealed good knowledge of preventive measures; however, patient awareness of the risk of contracting

other viral infections should be increased to help control transmission in dental institutions.

Abbreviations

COVID-19 - coronavirus disease of 2019

SARS-CoV-2 - Severe acute respiratory syndrome coronavirus 2

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Sažetak

ZADOVOLJSTVO PACIJENATA STOMATOLOŠKOM ZDRAVSTVENOM ZAŠTITOM TOKOM IZBIJANJA VIRUSA COVID-19 U SRBIJI

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Uvod: Virus Covid-19 spada u grupu respiratornih virusa. Stomatolozi zbog prirode posla su u većem riziku od zaražavanja novim korona virusom tokom stomatoloških intervencija. Poznavanje puta prenošenja virusa od velikog je značaja u prevenciji i suzbijanju razvoja infekcije. Strah pacijenata od zaražavanja tokom pandemije korona virusa bio je veliki i zbog toga su odlagane posete stomatologu zbog standardnih stomatoloških usluga već su se pacijenti javljali samo zbog hitnih stanja. Poštovanje mera zaštite direktno je uticalo na zadovoljstvo pacijenata stomatološkim uslugama.

Cilj ovog rada je bio ispitivanje zadovoljstva pacijenata stomatološkim uslugama tokom pandemije korona virusa.

Materijali i metode: Studija je dizajnirana kao studija preseka uz upotrebu epidemiološkog upitnika. Ukupno je anketirano 120 pacijenata, 60 iz privatne prakse i 60 iz državnog sektora. Upitnik je bio anonimnog karaktera i sadržao je pitanja sociodemografskog

tipa i pitanja vezana za poznavanje protokola i ocenu zadovoljstva stomatološkim uslugama. Podaci su obrađeni u programu SPSS 11.5.

Rezultati: Od 120 ispitanika prosečne starosti $38,92 \pm 13,08$ godina, 98% je bilo upoznato sa protokolom zaštite od korona virusa. Nezadovoljnih nije bilo ni u privatnoj praksi ni u javnom sektoru, jedina razlika je u stepenu zadovoljstva. U privatnoj praksi je više bilo veoma zadovoljnih kao najviši nivo zadovoljstva, dok je u javnom sektoru bilo više veoma zadovoljnih.

Zaključak: Dobro poznavanje protokola zaštite i sprečavanja širenja virusa podiže svest kod stomatologa i pacijenata. Poštovanjem mera od strane stomatologa i pacijenata zaražavanje virusom svedeno je na minimum, a samim tim je zadovoljstvo pacijenata stomatološkim uslugama na višem nivou.

Ključne reči: Covid-19, zadovoljstvo pacijenata, stomatologija.

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