The study protocol: COVID-19 awareness and perception among dentists in the Russian Federation

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Abstract. – **OBJECTIVE:** Coronavirus disease 2019 (COVID-19) has spread rapidly worldwide since it has been first identified in November 2018. It is transmissible *via* air droplets from infected individuals. Close contact between dentists and patients has aggravated the pandemic situation in Russia. It is necessary to reduce the risk of spreading COVID-19 during dental appointments by adhering to the Centers for Disease Control and Prevention (CDC) and the World Health Organization (WHO) recommendations.

SUBJECTS AND METHODS: Questionnaires were developed to assess levels of COVID-19 infection and preventive measures in private and state-funded dental practices in Moscow and other cities in Russia. Two questionnaires were developed to assess the COVID-19 situation among dental professionals and their patients. The first, for dentists, included four domains: demographic data, signs, and symptoms of COVID-19 experienced by dentists, personal protective measures taken by dentists, and presence or absence of dental practice during the pandemic. For dentists' patients, the second included domains regarding their health status after their dental appointment. 1,500 questionnaires were sent to different cities and regions of Russia; 1,011 questionnaires (67.4%) were returned. We used statistical observation (monitoring) and clustering to analyze the data. The x^2 was used to check the significance level.

RESULTS: We found a direct relationship between those patients who contracted COVID-19 after dental treatment by those dentists who did not follow recommended measures in the dental clinic. However, patients were less likely to become infected after dental treatment by those dentists who followed the measures, such as the disinfection of surfaces and dental equipment several times a day, the wearing of medical masks by all patients, and the airing of the dental office after each patient for 10 minutes.

CONCLUSIONS: Dentists wearing an FFP2 or FFP3 respirator, as well as a sterile disposable microfiber medical gown, prevented their patients from becoming infected with COVID-19 at dental appointments and, as a result, the spread of the virus. A key aspect of this study is its knowledge regarding preventive measures against COVID-19. The findings of this study can potentially help in formulating strategies to reduce the prevalence of COVID-19.

Key Words:
  COVID-19, Dentist, Awareness, Infection, Infection control, Protective measures.

Introduction

COVID-19 has affected many countries worldwide. As of August 2021, 201,224,770 cases of COVID-19 had been reported, including 4,274,727 deaths[1-3]. Among the countries, the United States of America had the highest number of cases at 36,184,225, of which 631,331 were fatal, followed by India and Brazil[2,4,5]. The Russian Federation had the fourth-highest number of cases (6,379,904), with 162,509 deaths[4]. Unfortunately, the number of cases continues to grow. That is why it is necessary to introduce preventive and reductive measures to control the spread of COVID-19 worldwide.

In March 2020, the CDC and the WHO developed preventive measures to control the spread of COVID-19, including the enforcement of total lockdowns in affected countries[6,7]. The first recorded cases of the COVID-19 outbreak occurred in Wuhan, China, and quickly spread across the country[1,2]. Airborne droplets transmit this virus from an infect-
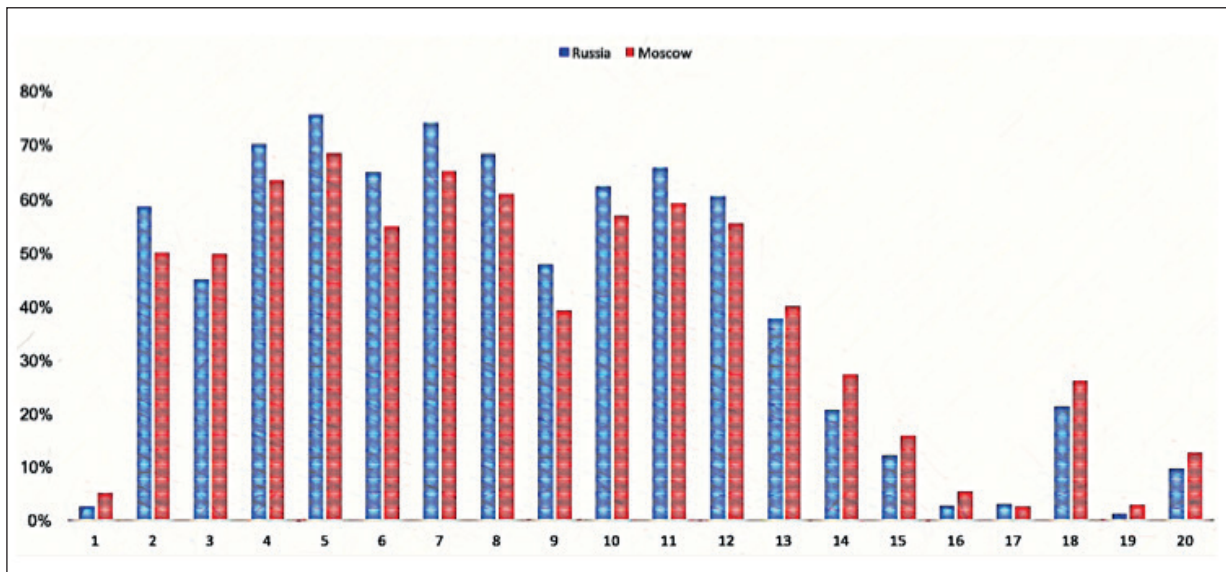
Figure 1. The measures of precautionary which dentists use on the dental appointment after February 21, 2020, in Moscow and Russia.

ed person to a healthy one[3,7-9]. Medical professionals, including dentists, are at risk due to the close contact between the dentist and the patient during a dental appointment. The disease can be transmitted through saliva, aerosol clouds, blood, and microorganisms while the doctor inspects the patient's oral cavity. A lack of preventive measures during dental appointments can also lead to the increased risk of COVID-19 infection among dentists.

It can be assumed that medical staff is faced with bodily excretions of those patients who carry coronavirus and be infected during a dental appointment. Therefore, dental care should only be provided in acute pain and emergency conditions.

However, there is a lack of studies investigating effective preventive measures during dental appointments. A previous study[10] has shown that the virus remains viable and contagious for several hours in the air and on surfaces. To improve the outcomes of the pandemic, strict compliance with safety measures is mandatory. This condition is especially true for dental clinics. Failure to comply with safety protocols to reduce COVID-19 during the gradual return to normal schedules will increase the risk for the patients, dentists, and clinical staff[5,11]. An important component of these safety measures includes wearing personal protective equipment (PPE): a protective suit, mask, gloves, and shoes[10-12].

This study aimed to establish dentists' levels of awareness about how to protect themselves and their patients against infection during the COVID-19 pandemic.

Subjects and Methods

Study Design

The study protocol was registered with the World Pandemic Research Network (WPRN-486352). The survey was designed as a cross-sectional survey using a previously standardized questionnaire.

Study Setting

The study was conducted between March 2020 and November 2021 (Figure 1). The central management team contacted 1,011 collaborating dentists working with research groups in Russia. Cities in Russia that participated in the survey are shown in Figure 2.

Study Population

The study included 1,011 registered dental professionals working within the national health system and private or public clinics, including general dentists and dental specialists. No exclusion criteria were applied. The total number of working dentists was obtained to establish a sample size of the study. The study also included registered patients who came for their dental appointments.

Development and Refinement of the Questionnaire

The questionnaire was not pre-tested in the Russian Federation. The questionnaire for dentists consists of four main domains. The first domain contained demographic data, such as age, gender, area of residence, occupation, and occupational status. The second do-
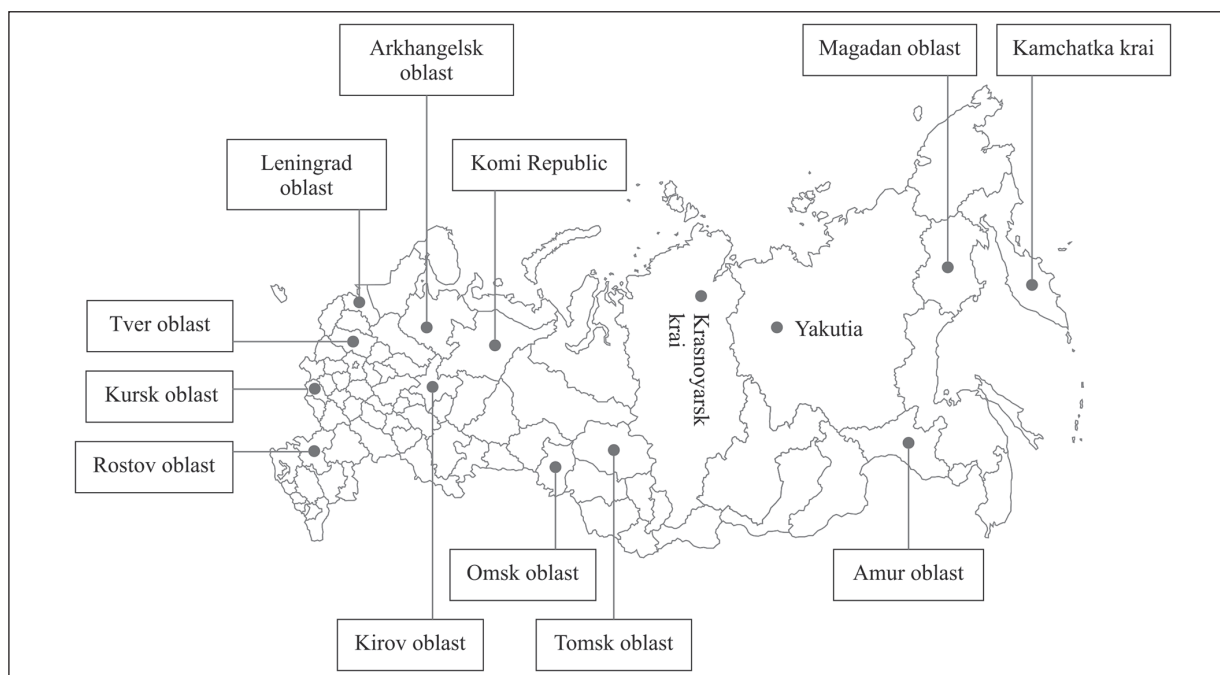
Figure 2. Participating regions and cities of the Russian Federation.

main contained questions concerning the symptoms or signs of COVID-19 infection. The third domain contained working conditions and PPE, which dentists used throughout the pandemic. The fourth domain contained questions on each dentist's knowledge of COVID-19 risk factors. A random sample of dentists from different regions and specializations was invited to evaluate the questionnaire. To determine the reliability of the questionnaire, it was re-sent to the experimental sample four to seven days after the first survey, without any recommendations. The questionnaire was conducted and analyzed through online surveys (Google Form google.com/forms/about/). The questionnaire for patients included questions regarding their contagious status after the dental appointment.

Data Management

The questionnaires were anonymous; only the author and the table creator had access to the data presented in the table. The data from dentists and their patients from all regions of the Russian Federation were exported and sent to the authors for statistical analysis using different software programs.

Statistical Analysis

We used statistical observation (monitoring) and clustering to analyze the data. Data were pre- sented as absolute and relative values and were compared. The information was encoded using Microsoft Excel™ 2019 (Microsoft Corp., Washington, WA, USA) for Mac (or Windows equivalent) and analyzed for accuracy. The x^2 was used for checking the significance level.

Results

A total of 1,500 questionnaires were sent to different cities and regions of the Russian Federation. Among these, 1,011 questionnaires (67.4%) were returned. The number of questionnaires distributed by region, COVID-19 prevalence in the general population, and the number of questionnaires retrieved are shown in Table I.

In all regions, female predominance was observed. Additionally, there were 10% fewer dentists working in the national health system than those practicing privately (Table II). The highest proportion of dentists (2/3 of respondents) who acknowledged having experienced at least one symptom of COVID-19 was in Moscow. The proportion of dentists who tested positive and were hospitalized due to COVID-19 was generally low. In Moscow, this figure was more than 5%.

Table I. Sent/received questionnaires and the prevalence of COVID-19 in the regions of the Russian Federation.

Indicators Cities/Regions	Sent questionnaires	Received questionnaires	Confirmed cases of COVID-19 on August 3, 2020
Moscow	500	390	243406
Moscow oblast	350	260	154936
Saint-Petersburg	50	36	92794
Nizhny Novgorod	50	34	6236
Ekaterinburg	50	23	12279
Rostov-on-Don	50	30	13205
Samara	50	23	6975
Central Federal District	50	29	57253
Southern Federal District	50	18	28500
North Caucasian Federal	50	19	120830
District			
Volga Federal District	50	49	43205
Northwestern Federal District	50	23	16647
Ural Federal District	50	32	22686
Far Eastern Federal District	50	22	15310
Siberian Federal District	50	23	16608
Total	1500	1011	850870

Based on the characteristics and effectiveness of the use of protective equipment, a statistical analysis was carried out. As a result of this analysis, and following statistical differences, the following conclusions were formulated:

1. Protective equipment for which no statistical differences were found – $p > 0.05$ (unproven effectiveness as a result of the questionnaire): medical mask, disposable protective face mask, waterproof disposable protective robe, disposable protective robe, safety glasses, sterile disposable gloves, disposable gloves that were not sterile, rotating tools with check valve.

2. Statistical differences — $p < 0.05$ (proven effectiveness due to the questionnaire) were revealed for such means of protection as FFP2 or FFP3 respirator, a sterile disposable medical gown made of microfiber.

It is necessary to note several points that will complement the results of the statistical analysis:

1. Medical masks have shown the least effectiveness as a means of protection.

Table II. Dentists working in private practice and the healthcare system with compulsory health insurance* in the regions of the Russian Federation.

Indicators Cities/Regions	Working with system CHI	Private practice
Moscow	191	199
Moscow region	203	57
Saint-Petersburg	17	19
Nizhny Novgorod	5	29
Ekaterinburg	4	19
Rostov-on-Don	4	26
Samara	3	20
Central Federal District	3	26
Southern Federal District	9	9
North Caucasian Federal District	10	9
Volga Federal District	28	21
Northwestern Federal District	3	20
Ural Federal District	1	31
Far Eastern Federal District	5	17
Siberian Federal District	14	9
Total	500	511

After analyzing the statistical data of our survey, we obtained the following indicators for protective equipment and measures used during COVID-19.
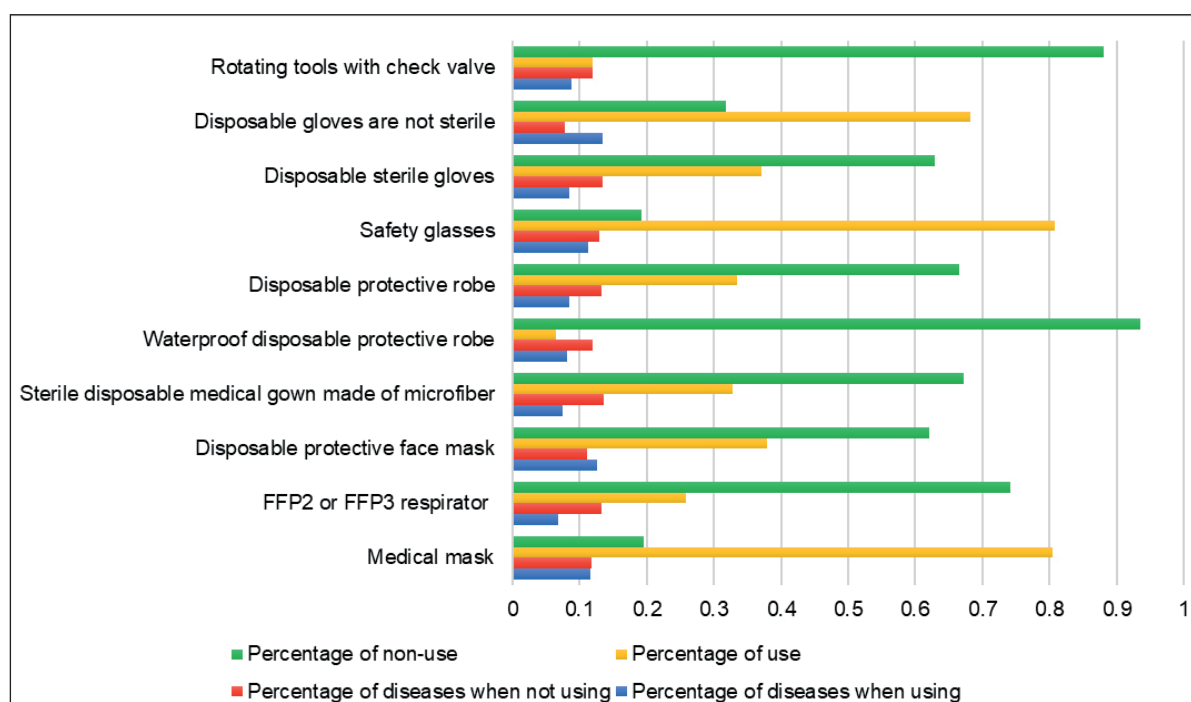
Figure 3. The variety of the protective equipment used at the dental appointment during the COVID-19 pandemic.

2. The statistical analysis data for waterproof disposable medical gowns cannot be correct because a disposable medical gown was used as a means of protection in most cases. That introduces an error in the measurement of statistical differences.

As for the analysis of the application of protective measures in the organization of the dental reception and the effectiveness of these protective measures, the following results were obtained:

1. As a result of data analysis, statistical differences (the proved effectiveness of protective measures) were revealed only for mandatory wearing of medical masks by all patients and for disinfection of surfaces and dental equipment of the dental clinic several times a day.
2. No statistical differences were found for all other protective measures, indicating their ineffectiveness in preventing viral infection spread.

Based on the statistical analysis of the questionnaire, we concluded that certain means and measures are the most effective in preventing the transmission of the COVID-19 virus between a dentist and a patient. These are FFP2 or FFP3 respirator, a sterile disposable medical gown made of microfiber, wearing medical masks by all patients, disinfection of surfaces, and dental equipment of the dental clinic several times a day. Using these protective means and measures significantly reduces the risk of transmission of a viral infection at a dentist's appointment.

Discussion

The proximity between dentists and their patients during dental appointments emphasizes the significance of preventive measures for controlling the spread of COVID-19. However, no consensus has been reached regarding dental services during the COVID-19 pandemic. The CDC published recommendations[6]; however, the consensus is yet to be reached due to the rapid deterioration of the epidemiological situation. The study conducted by Wolf et al[13] showed that only 12 dentists were tested and declared COVID-19 positive. Only 87 dentists reported having treated SARS-CoV-2 infected patients. The scientists from the Università Cattolica del Sacro Cuore determined that the saliva of contagious patients contains a high level of biomarkers, such as IgA1, IgA2 subclasses, and salivary free light chains. This study confirmed that the oral cavity is a biological environment for COVID-19, strengthening the argument in favor of using preventive measures during dentistry[14]. Thus, absolute compliance of dentists with these preventive
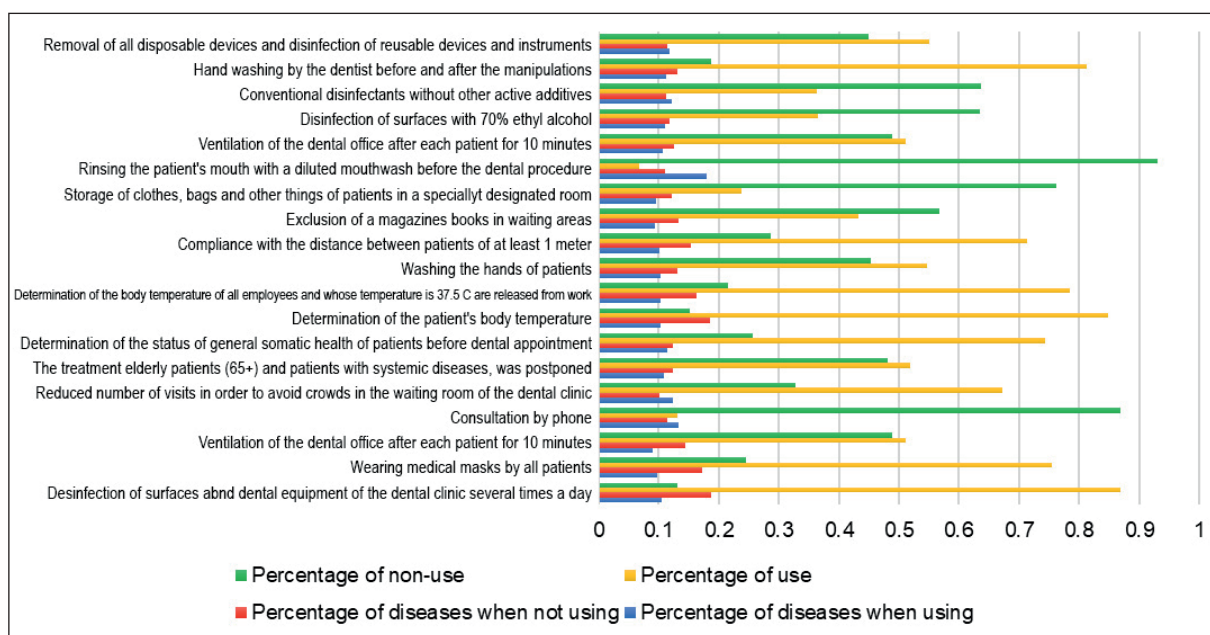
Figure 4. The variety of the protective measures used at the dental appointment during the COVID-19 pandemic.

measures, including the use of PPEs, is necessary during the pandemic.

Previous studies[15-17] have proven the effectiveness of masks, particularly N95 respirators, in reducing the risk of COVID-19 infection. Moreover, Tokuc et al[18] determined that the use of FFP2/N95 and FFP3/N99 respirators increased by 50.7% compared to that of surgical masks. Using medical masks, observing hand hygiene, and maintaining social distancing contribute to the prevention of the spread of COVID-19 and other respiratory diseases[19]. The effective implementation of these preventive measures can help reduce the spread of infection during surgical and dental procedures[7,20,21]. Mustafa et al[22] revealed that 85.9% of dentists argued that the use of personal protective medical equipment, such as dental protective eyewear, masks, and gloves, is useful for protecting them from asymptomatic COVID-19 patients. There is evidence[2,6,8] that dental tips should have special cleaning check valves to eliminate the risk of cross-contamination. Our hypothesis regarding the high risk of patients' contagiousness was supported by updated research from the UK. The researchers found that 16.3% of dentists had SARS-CoV-2 antibodies in their blood samples, compared to an estimated 6% to 7% of the general population. These findings strongly confirm that medical staff is in a high-risk group[23]. Notably, other scientists from Brazil have recently shown that salivary glands are a biological reservoir for SARS-CoV-2 and saliva. Their excretion plays a great role in spreading COVID-19, both for medical staff and patients[24].

It should be noted that dentists are in a high-risk group because before dental appointments, patients do not undergo a medical examination, and none of them take a Polymerase Chain Reaction (PCR) test. As a result, dentists are unaware of their patients' health status. Thus, our colleagues from India[25] recommend making it mandatory to get a negative COVID-19 test before receiving dental treatment.

The prevention and control of infections during medical care are always recommended, especially when a COVID-19 infection is suspected. However, no consensus has been reached regarding dental services during the COVID-19 pandemic. For instance, Bakaeen et al[26] also emphasizes that dentists need to limit their medical practices to survive crises that restrict services for a considerable period. Dental organizations should pay special attention to cleaning, disinfecting the premises, and ventilating passages. Furthermore, procedures that produce aerosol-cloud formations should be used only when needed. These measures will help reduce the aerosol particle dispersion in the environment[3,5].

Contrary to our opinion, participants of a recent study[27] argue that aerosol (water droplets) does not contribute to COVID-19 spread. We would like to note that our assumption about the availability of therapeutic methods for preventing COVID-19 spread was true. Our colleagues from the University of Genoa[28] have demonstrated that lipid-encapsulated ozonized oil (HOO) and water-soluble HOO (HOOws) treatment could be used for COVID-19 prevention. This combination of drugs allows neutralizing SARS-CoV-2 directly in the cells and even suppressing its reproduction. As a result of their daily use, the lung's oxygen level was high.

Moreover, some researchers in the University of Pavia, Italy[29] recommend using bio-inspired systems in dental appointments to reduce the risk of bacteremia and aerosol generation, which is necessary for the COVID-19 pandemic. In addition, nowadays, due to the widespread vaccination against COVID-19, dentists can become more protected in a dental appointment. Therefore, most of them are eager to be vaccinated to protect themselves. According to the questionnaire held in India, 65% of dentists responded that they want to be vaccinated[30]. However, according to the worldwide statistic, most people who do not have an attitude towards medical staff do not wish to be vaccinated, especially in the Russian Federation. As per Reuters COVID-19 Tracker, only 34.6% of the citizens of the Russian Federation are vaccinated. Due to this, the Russian dentists are still at risk in dental appointments[31].

It is mandatory worldwide to pass a PCR test before a dental appointment; this rule is included in the medical protocol. For instance, according to the recently held research in China, Thailand, Japan, Nigeria, Egypt, Switzerland, New Zealand, Canada, India, and the USA, patients are allowed dental treatments provided the PCR-test is negative for Covid-19. Nevertheless, unfortunately, there are no such guidelines for dental clinics in the Russian Federation[32,33].

The virus's high prevalence and long viability in the environment necessitate proper and frequent disinfection of all surfaces and objects in direct contact with medical workers and patients. As the safety of the patients is paramount for medical professionals, providing protective masks and hand sanitizers and limiting the contact between patients is essential to reduce the risk of COVID-19 infection.

Conclusions

To the best of our knowledge, this is the first study providing new information regarding the status of COVID-19 infection among dentists in the Russian Federation. In summary, dentists, patients, and all involved medical staff need to be informed of preventive measures to minimize the risk of infection. According to the research, we have found out patients were prevented from getting infected at a dental appointment thanks to certain measures: disinfecting surfaces and dental equipment of the dental clinic several times a day, wearing medical masks by all patients, airing the dental office after each patient for ten minutes, wearing an FFP2 or FFP3 respirator by doctors; wearing a sterile disposable microfiber medical gown. As a result, the spread of coronavirus infection was reduced. Furthermore, knowledge regarding these preventive measures is crucial for our research..

References

1) Li Q, Guan X, Wu P, Wang X, Zhou L, Tong Y, Ren R, Leung KSM, Lau EHY, Wong JY, Xing X, Xiang N, Wu Y, Li C, Chen Q, Li D, Liu T, Zhao J, Liu M, Tu W, Chen C, Jin L, Yang R, Wang Q, Zhou S, Wang R, Liu H, Luo Y, Liu Y, Shao G, Li H, Tao Z, Yang Y, Deng Z, Liu B, Ma Z, Zhang Y, Shi G, Lam TTY, Wu JT, Gao GF, Cowling BJ, Yang B, Leung GM, Feng Z. Early transmission dynamics in Wuhan, China, of novel coronavirus-infected pneumonia. N Engl J Med 2002; 382: 1199-1207.

2) Wang W, Tang J, Wei F. Updated understanding of the outbreak of 2019 novel coronavirus (2019-nCoV) in Wuhan, China. J Med Virol 2020; 92: 441-447.

3) Volgenant CMC, de Soet JJ. Cross-transmission in the dental office: Does this make you ill? Curr Oral Health Rep 2018; 5: 221-228.

4) Worldometer. COVID-19 Coronavirus Pandemic. Available online: https://www.worldometers.info/coronavirus/ (Accessed on August 15, 2020).

5) Cagetti MG, Cairoli JL, Senna A, Campus, G. COVID-19 outbreak in North Italy: An overview on dentistry. A questionnaire survey. Int J Environ Res Public Health 2020; 17: 3835.

6) Centers for Disease Control and Prevention. Guidance for Dental Settings. Available online: https://www.cdc.gov/coronavirus/2019-ncov/hcp/dental-settings.html (Accessed on June 11, 2020).

7) World Health Organization. Coronavirus Disease (COVID-2019) Advice for the Public. Available online: https://www.who.int/emergencies/diseases/novel-coronavirus-2019 (Accessed on July 22, 2020).

8) Sun P, Lu X, Xu C, Sun W. Understanding of COVID-19 based on current evidence. J Med Virol 2020; 92: 548-551.

9) van Doremalen N, Bushmaker T, Morris DH, Holbrook MG, Gamble A, Williamson BN, Tamin A, Harcourt JL, Thornburg NJ, Gerber SI, Lloyd-Smith JO, de Wit E, Munster VJ. Aerosol and surface stability of SARS-CoV-2 as compared with SARS-CoV-1. N Engl J Med 2020; 382: 1564-1567.

10) Xiao J, Shiu EYC, Gao H, Wong JY, Fong MW, Ryu S, Cowling BJ. Nonpharmaceutical measures for pandemic influenza in nonhealthcare settings-personal protective and environmental measures. Emerg Infect Dis 2020; 26: 967-975.

11) Chen X, Ran L, Liu Q, Hu Q, Du X, Tan X. Hand hygiene, mask-wearing behaviors and its associated factors during the COVID-19 epidemic: A cross-sectional study among primary school students in Wuhan, China. Int J Environ Res Public Health 2020; 17: 2893.

12) Ma QX, Shan H, Zhang HL, Li GM, Yang RM, Chen JM. Potential utilities of mask-wearing and instant hand hygiene for fighting SARS-CoV-2. J Med Virol 2020; 92: 1567-1571.

13) Wolf TG, Zeyer O, Campus G. COVID-19 in Switzerland and Liechtenstein: a cross-sectional survey among dentists' awareness, protective measures and economic effects. Int J Environ Res Public Health 2020; 17: 9051.

14) Napodano C, Callà C, Fiorita A, Marino M, Taddei E, Di Cesare T, Passali GC, Di Santo R, Stefanile A, Fantoni M, Urbani A, Paludetti G, Rapaccini GL, Ciasca G, Basile U. Salivary biomarkers in COVID-19 patients: towards a wide-scale test for monitoring disease activity. J Pers Med 2021; 11: 385.

15) Chou R, Dana T, Jungbauer R, Weeks C, McDonagh MS. Masks for prevention of respiratory virus infections, including SARS-CoV-2, in health care and community settings: a living rapid review. Ann Intern Med 2020; 173: 542-556.

16) Radonovich LJ, Simberkoff MS, Bessesen MT, Brown AC, Cummings DAT, Gaydos CA, Los JG, Krosche AE, Gibert CL, Gorse GJ, Nyquist AC, Reich NG, Rodriguez-Barradas MC, Price CS, Perl TM. N95 respirators vs medical masks for preventing influenza among health care personnel: a randomized clinical trial. JAMA 2019; 322: 824-833.

17) Wang X, Pan Z, Cheng Z. Association between 2019-nCoV transmission and N95 respirator use. J Hosp Infect 2020; 105: 104-105.

18) Tokuc B, Coskunses FM. Knowledge, attitude and practice of dentists in Coronavirus disease 2019 pandemic in Turkey. Eur Oral Res 2020; 54: 86-91.

19) Chiu NC, Chi H, Tai YL, Peng C-C, Tseng C-Y, Chen C-C, Tan BF, Lin C-Y. Impact of wearing masks, hand hygiene, and social distancing on influenza, enterovirus, and all-cause pneumonia during the coronavirus pandemic: Retrospective national epidemiological surveillance study. J Med Internet Res 2020, 22, e21257.

20) Centers for Disease Control and Prevention. Healthcare Personnel Preparedness Checklist for 2019-nCoV. Available online: https://www.cdc.gov/coronavirus/2019-ncov/downloads/hcp-preparedness- checklist.pdf (Accessed on June 4, 2020).

21) World Health Organization. Novel Coronavirus (SARS-CoV-2) Situation Reports. Available online: https://www.who.int/emergencies/diseases/novel-coronavirus-2019/situation-reports/ (Accessed on June 4, 2020).

22) Mustafa RM, Alshali RZ, Bukhary DM. Dentists'knowledge, attitudes, and awareness of infection control measures during COVID-19 outbreak: a cross-sectional study in Saudi Arabia. Int J Environ Res Public Health 2020; 17: 9016.

23) Center for Infectious Disease Research and Policy. Dental Workers Found to Be at Increased COVID-19 Risk. Available online: https://www.cidrap.umn.edu/news-perspective/2021/06/dental-workers-found-be-increased-covid-19-risk, (Accessed on August 15, 2021).

24) Matuck BF, Dolhnikoff M, Duarte-Neto AN, Maia G, Gomes SC, Sendyk DI, Zarpellon A, de Andrade NP, Monteiro RA, Pinho JRR, Gomes-Gouvêa MS, Souza S, Kanamura C, Mauad T, Saldiva PHN, Braz-Silva PH, Caldini EG, da Silva LFF. Salivary glands are a target for SARS-CoV-2: a source for saliva contamination. J Pathol 2021; 254: 239-243.

25) Jethi N, Pandav G, Nagri D, Pandav S, Kumari D, Kaur M. Asymptomatic COVID-19 patients and possible screening before an emergency aerosol related endodontic protocols in dental clinic-a review. J Family Med Prim Care 2020; 30: 4552-4556.

26) Bakaeen LG, Masri R, Al Tarawneh S, Garcia LT, Al Hadidi A, Khamis AH, Hamdan AM, Baqain ZH. Dentists' knowledge, attitudes, and professional behavior toward the COVID-19 pandemic: a multisite survey of dentists' perspectives. J Am Dent Assoc 2021; 152: 16-24.

27) Ahmed MA, Jouhar R, Adnan S, Ahmed N, Ghazal T, Adanir N. Evaluation of patient's knowledge, attitude, and practice of cross-infection control in dentistry during COVID-19 pandemic. Eur J Dent 2020; 14: S1-S6.

28) Izzotti A, Fracchia E, Au W, Colombo M, Pfeffer U, Emionite L, Pavan S, Miotto D, Lova P, Grasselli E, Faelli E, Piero R, Tiso M, Pulliero A. Prevention of Covid-19 infection and related complications by ozonized oils. J Pers Med 2021; 11: 226.

29) Butera A, Maiorani C, Natoli V, Bruni A, Coscione C, Magliano G, Giacobbo G, Morelli A, Moressa S, Scribante A. Bio-inspired systems in nonsurgical periodontal therapy to reduce contaminated aerosol during COVID-19: a comprehensive and bibliometric review. J Clin Med 2020; 9: 3914.

30) Kaur A, Kaur G, Kashyap A, Singh G, Singh H, Khilji I, Singh R. Attitude and acceptance of Covid-19 vaccine amongst medical and dental fraternity - a questionnaire survey. Rocz Panstw Zakl Hig 2021; 72: 185-191.

31) Reuters Covid-19 Tracker. Russia. Available online:https://graphics.reuters.com/world-coronavirus-tracker-and-maps/countries-and-territories/russia/ (Accessed on 29, October 2021).

32) Cheeseman V. COVID-19 Testing in the Dental Office: How, When, and Why? Perio-Implant Advisory. Available online: https://www.perioimplantadvisory.com/periodontics/oral-medicine-anesthetics-and-oral-systemic-connection/article/14176963/covid19-testing-in-the-dental-office-how-when-and-why (Accessed on August 15, 2021).

33) Jiang C, Duangthip D, Auychai P, Chiba M, Folayan M, Hamama H, Kamnoedboon P, Lyons K, Matangkasombut O, Mathu-Muju K, Mathur V, Mei M, Morgan M, Poolthong S, Rahul M, Srinivasan M, Takahashi T, Yaklai S, Zhang S, Zou X, Chu C, Lo E. Changes in oral health policies and guidelines during the COVID-19 pandemic. Front Oral Health 2021; 2: 668444.