

DENTAL PRACTICE ADAPTATIONS DURING THE COVID-19 PANDEMIC

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ABSTRACT

Aim of the study: this study investigates the impact of the SARS-CoV-2 pandemic on dental practice through a questionnaire developed by four dentists at Lucian Blaga University. **Material and method:** the questionnaire, refined based on expert feedback, consisted of 14 questions divided into two sections: demographic data (6 questions) and dental practice during the pandemic (8). The second section addressed protocols, protective measures, activity suspension effects, infection rates, and vaccination compliance. **Results:** distributed to 600 licensed dentists in Sibiu County, the final analysis included 165 complete responses, resulting in a 27.5% response rate. The demographic breakdown revealed 64.2% female and 35.8% male respondents, with the largest age group (47.3%) being 31-40 years. Most participants (68.3%) were general dentists, and 58.8% had over ten years of experience. Only 13.3% of dental practices rated the protocol as satisfactory, 37.0% found it acceptable, and 49.1% deemed it unsatisfactory. The perceived effectiveness of protective measures highlighted that increased personal protective equipment was crucial (mean=3.95). The pandemic negatively affected the profession, with physical discomfort (mean=4.08) and increased stress (mean=3.77) being significant concerns. Statistical analyses utilized ANOVA and Chi-Square tests, revealing statistically significant differences in protocol perceptions ($p < 0.05$). **Conclusion:** This study emphasizes the need for improved protocols and supports ongoing adaptations in dental practice during health crises.

Keywords: COVID-19, dental practice, survey analysis, protective measures, pandemic protocols

INTRODUCTION

At the end of 2019, significant public health concerns arose following an increased number of pneumonia cases with an unknown cause in the Hubei province of China [1]. This cluster of cases initially thought to be linked to the consumption of wild animals, became the catalyst for a global epidemiological investigation [2].

Through collaborative efforts between the Chinese Center for Disease Control and Prevention (China CDC) and local authorities, a novel Betacoronavirus was identified as the cause. The virus rapidly spread across multiple countries, leading the World Health

Organization (WHO) to declare it a global health emergency [3].

In February 2020, WHO officially named the virus **Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2)** and the disease **Coronavirus Disease 2019 (COVID-19)**. The global response to the pandemic showcased the importance of rapid epidemiological investigations, international cooperation, and public health preparedness [3,4].

Since the onset of the pandemic, state authorities have implemented various measures to prevent the spread of COVID-19, especially in the absence of a specific treatment. General recommendations such as mask-wearing, social

distancing, hand hygiene, and avoiding crowded areas proved insufficient, prompting stricter measures, including curfews and interruption of non-essential activities [5]. These actions aimed to reduce infection rates and alleviate the burden on overwhelmed public health systems.

Dentistry, in particular, was classified as high-risk due to the close patient contact and aerosol-generating procedures involved, necessitating heightened preventive actions [6,7]. On March 16, 2020, Romania declared a state of emergency for 30 days, formalized through a presidential decree published in the Official Gazette [8]. Shortly after, on March 21, 2020, "Military Ordinance No. 2" was issued, implementing further restrictions, including activities in dental offices. Exceptions were for emergency dental interventions. These measures came into effect on March 22, 2020, at 10:00 p.m. Romanian time, as part of the government's efforts to curb the spread of COVID-19.

The suspension of dental office activities for two months, enforced through military ordinances, contributed to a global trend of similar restrictive measures. This temporary halt in operations created a significant crisis, particularly in private medical practices. The absence of revenue led to severe financial difficulties, as employee costs, rent, equipment, and utilities persisted despite the lack of income [9]. During the suspension of dental office activities compliance with these provisions significantly increased workloads, requiring additional staff and extending patient intervals due to heightened disinfection protocols. The need for protective equipment and air sterilization devices, which were scarce and expensive, exacerbated financial difficulties. These challenges, coupled with the risk of contamination, led to heightened anxiety and depression among medical professionals [6,7,9].

Considering the multitude of changes and their complexity, we deemed it necessary to know how they were perceived by those who had to implement them and then comply with them. Our cross-sectional study aimed to evaluate the opinion of dentists regarding the protocol issued by the authorities and their

perception of the usefulness of additional protective measures and equipment. We wanted to determine the effects of this normative act and possible implementation difficulties. The study provided data on the infection rate among dentists in Sibiu and their response to the national vaccination campaign.

MATERIAL AND METHODS

To collect data, we developed a questionnaire addressing key areas of interest with different question types. The initial draft was created by four practicing dentists and employees at Lucian Blaga University of Sibiu's Faculty of Medicine. Several revisions were made based on their feedback regarding the relevance, structure, and ease of completion. A statistician then reviewed the final version, which comprised 14 questions across two sections: demographic data (6 questions) and dental practice during the SARS-CoV-2 pandemic (8). The second section focused on pandemic protocols, protective measures for staff, the impact of activity suspension, infection rates, and vaccination compliance. Initially, the questionnaire was distributed via social media to licensed dentists in Sibiu County, with voluntary participation and informed consent. In the second phase, the Sibiu College of Dentists emailed it to members, and 75 printed copies were distributed to dental offices. Thus, the questionnaire was distributed, in different forms, to 600 dentists with the right to practice freely in Sibiu County.

The results of the data analysis were presented in the form of frequencies/percentages, means (M) and standard deviations (SD), confidence intervals (95% CI), and the mode (the most common response). Comparisons between independent groups (respondents who appreciate the protocol issued by the Romanian authorities, which regulates the resumption of activity in Dental Medicine during the State of Emergency as satisfactory compared to those who consider it acceptable and those who thought it is unsatisfactory) were carried out using the ANOVA test and Bonferroni post hoc test. We used the Chi-Square test or the Fischer test for the comparison of data. A p-value < 0.05 was considered statistically significant. Statistical

analysis was performed using the software SPSS v. 20. (SPSS Inc, Chicago, IL, USA).

RESULTS

Socio-demographic data on respondents

The data collection process was active for three months - April-June 2022 - and in the end, 165 complete questionnaires were collected, the response rate being 27.5%. Of the total respondents, 106 (64.2%) were women, the remaining 59 (35.8%) were men. The 31-40-year-old category completed 78 questionnaires (47.3%), the most, followed by the over 40-year-old category with 52 (31.5%) completed questionnaires. The category of young doctors, 20-30 years old, provided the fewest answers 35 (21.2%). Among the participants in the study, 112 (68.3%) were general dentists, and the other 52 (31.7%) had a specialist doctor's degree. Most respondents 97 (58.8%) have more than 10 years of practice in the field of dentistry, the remaining 41.2% (68) practicing less than 5 years (34-20.6%) or between 5 and 10 years (34-20.6%). Almost half (46.7) of the study participants work in small dental practices with a maximum of 2 practicing doctors, 51 (30.9%) in practices with 3 to 5 doctors, and the rest work in large collectives with more than 5 doctors with different specializations 37 (22.4%). These offices are found in an overwhelming majority in the urban environment 95.7% (157), rural environment had 7 (4.3%) responding doctors.

The overall perception of the protocol for resuming dental practice operations

Regarding the protocol imposed by the Romanian authorities for the resumption of activity in dental practices, after the period of suspension, the dentists participating in the survey considered it satisfactory (13.3%) or acceptable under the given conditions (37%). Most of them believed the protocol had deficiencies, appreciating it as unsatisfactory (49.1%).

Depending on the answers to this question, we divided the total group of respondents into 3 samples (groups):

1. Sample (group) 1 (satisfactory-S) made up of respondents who considered the protocol issued by the authorities to be satisfactory;

2. Sample (group) 2 (acceptable-A) respondents who considered the protocol acceptable under the given conditions;

3. Sample 3 (unsatisfactory-NS), those who considered the protocol unsatisfactory.

In what follows, we presented the general statistical results of our research and the statistical breakdown of the responses of the three samples (groups) specified previously, highlighting the results with significant statistical differences ($p < 0.05$).

Table 1. How do dentists consider the protocol that regulates the resumption of activity during the State of Emergency

Degree of satisfaction	code	n(%)
Satisfactorily	S	22(13.3 / 13.4)
Acceptable under the given conditions	A	61(37.0 / 37.2)
Unsatisfactory	NS	81(49.1 / 49.4)
Abstain		1(0.6)

Measures to prevent the spread of SARS-Cov2 infection in dental offices

Among the measures to prevent the spread of SARS-Cov-2 infection within and through dental practices, increasing protective equipment for medical personnel was considered the most useful ($m=3.95$). At the opposite pole, triage based on questionnaires completed in the office, provision of protective equipment (other than face mask) for patients, and avoidance of treatments were considered almost unuseful ($m=2.90$, $m=2.82$, respectively $m=2.45$). Other safeguards were considered useful by respondents to our survey:

- Increasing time intervals between patients and additional disinfection of waiting and treatment rooms ($m=3.38$);

- Epidemiological triage by telephone and recording the body temperature of patients ($m=3.38$). The statistical analysis of the

answers of the three samples (S, A, Ns) highlights concordant opinions on protective equipment that was considered very useful (SvsNs=0.817, SvsA=1.00, AvsNs=0.822). The usefulness of the other categories of measures was assessed significantly differently by the two samples (SvsNs) and confirmed by the comparative statistical analysis. Table 2 below shows statistical data.

Table 2. The usefulness of the additional protection measures applied during the State of Emergency/Alert

Measures	n M±SD Mode(%) Missing(%)	S 22	A 61	NS 81	All Svs.A Svs.NS Avs.NS
Telephone triage, epidemiological and recording of body temperature of patients	161 3.38±1.40 5(29.7 / 30.4) 4(2.4)	22 3.86±1.49 5(54.5) 0	59 3.61±1.30 5(32.8 / 33.9) 2(3.3)	80 3.08±1.39 3(34.6 / 35.0) 1(1.2)	0.017 1.000 0.055 0.074
Triage based on a questionnaire completed in the office)	157 2.90±1.47 1(26.1 / 27.4) 8(4.8)	21 3.67±1.49 5(40.9 / 42.9) 1(4.5)	57 3.09±1.35 3(27.9 / 29.8) 4(6.6)	79 2.57±1.47 1(35.8 / 36.7) 2(2.5)	0.004 0.344 0.006 0.116
Protective equipment for patients	158 2.82±1.43 1(24.8 / 25.9) 7(4.2)	21 3.90±1.38 5(45.5 / 47.6) 1(4.5)	58 2.91±1.30 3(34.4 / 36.2) 3(4.9)	79 2.47±1.39 1(34.6 / 35.4) 2(2.5)	0.000 0.014 0.000 0.177
Increasing protective equipment for medical personnel	155 3.95±1.14 5(40.6 / 43.2) 10(6.1)	21 4.14±1.20 5(54.5 / 57.1) 1(4.5)	55 4.05±1.04 5(41.0 / 45.5) 6(9.8)	79 3.84±1.18 5(37.0 / 38.0) 2(2.5)	0.395 1.000 0.817 0.822
Avoiding certain treatments	154 2.45±1.36 1(34.5 / 37.0) 11(6.7)	21 3.10±1.58 3,5*(31.8 / 33.3) 1(4.5)	56 2.66±1.30 3(32.8 / 35.7) 5(8.2)	77 2.12±1.27 1(45.7 / 48.1) 4(4.9)	0.004 0.604 0.009 0.062
Increasing time intervals between patients and additional disinfection of waiting and treatment rooms	156 3.38±1.28 3(31.5 / 33.3) 9(5.5)	21 3.95±1.12 5(40.9 / 42.9) 1(4.5)	56 3.59±1.20 3(27.9 / 30.4) 5(8.2)	79 3.08±1.30 3(34.6 / 35.4) 2(2.5)	0.005 0.765 0.014 0.058

Increasing protective equipment for medical personnel was considered the most effective measure to prevent the spread of SARS-Cov-2 infection. From the multitude of protective equipment, the N95, FFP2, and PFFP3 masks were the most effective (M=4.29) as the majority of respondents (60%) appreciated the effectiveness of this equipment with a maximum on a scale from 1 to 5. The face shield (M=4.20) and protective glasses (M=4.18) as equipment confer increased

protection against the spread of SARS-Cov-2 infection. The three samples agreed on the efficiency of these pieces of equipment. Footwear protection (M=2.62) and coveralls (M=2.64) were the equipment perceived as the least effective. Statistically significant discrepancies related to protective equipment appear between sample 1(S) and sample 3(Ns) with different opinions regarding the utility of protection for footwear (SvsNs=0.003), overalls (SvsNs=0.019), waterproof gown (SvsNs= 0.04) and capelin (S vs Ns=0.053). Table 3 presents the results and detailed statistical analysis of the perception of the responding physicians about the effectiveness of the protective equipment used.

The effects of the pandemic on practicing the profession of dentist

The most prominent negative effect reported by respondents was the physical discomfort caused by the additional protective equipment (M=4.08). Working under heightened protective measures also increased stress levels, with most participants identifying stress as an issue (M=3.77, Mode=5). Another consequence was the rise in dental treatment costs (M=3.45) while working hours also extended (M=3.46). Other effects were deteriorated mental and emotional well-being (M=3.24), financial difficulties (M=3.17), and a decrease in patient numbers (M=3.17). Despite these challenges, most respondents indicated that relationships within the medical team remained stable (M=2.34), and the rapport with patients did not suffer significantly (M=2.29). We found no significant statistical differences among the three sample groups regarding their perceptions of the effects of practicing dentistry during the SARS-CoV-2 pandemic.

Implementation of the Protocol for Resuming Dental Activities During the SARS-CoV-2 Pandemic

Table 3. The utility and degree of protection offered by additional protective equipment

Equipment	n M±SD Mode(%) Missing(%)	S 22	A 61	NS 81	All Svs.A Svs.NS Avs.NS
Mask N95, FFP2, PFFP3	163 4.29±1.05 5(60.0 / 60.7) 2(1.2)	22 4.64±0.7 3 5(77.3) 0	61 4.30±1.0 2 5(60.7) 0	80 4.19±1.1 3 5(55.6 / 56.3)	0.205 0.570 0.227 1.000

				1(1.2)	
Protective glasses	161 4.18±1.08 5(53.9 / 55.3) 4(2.4)	21 4.33±1.2 4 5(63.6 / 66.7) 1(4.5)	60 4.20±1.0 2 5(55.7 / 56.7) 1(1.6)	80 4.13±1.0 8 5(50.6 / 51.2) 1(1.2)	0.723 1.000 1.000 1.000
Cap	157 3.22±1.46 5(27.9 / 29.3) 8(4.8)	21 3.67±1.3 5 5(36.4 / 38.1) 1(4.5)	57 3.58±1.3 5 5(36.1 / 38.6) 4(6.6)	79 2.84±1.4 7 1(25.9 / 26.6) 2(2.5)	0.004 1.000 0.053 0.009
Waterproof robe	153 3.29±1.47 5(29.7 / 32.0) 12(7.3)	20 3.85±1.1 8 5(36.4 / 40.0) 2(9.1)	57 3.54±1.4 4 5(37.7 / 40.4) 4(6.6)	76 2.95±1.4 9 5(22.2 / 23.7) 5(6.2)	0.012 1.000 0.040 0.057
Chemise	154 2.64±1.40 1(28.5 / 30.5) 11(6.7)	21 3.19±1.2 5 3(31.8 / 33.3) 1(4.5)	57 2.95±1.4 9 1(23.0 / 24.6) 4(6.6)	76 2.26±1.3 0 1(37.0 / 39.5) 5(6.2)	0.003 1.000 0.019 0.014
Disposable gown	158 3.13±1.40 3(28.5 / 29.7) 7(4.2)	21 3.48±1.4 4 4(31.8 / 33.3) 1(4.5)	58 3.34±1.4 5 5(32.8 / 34.5) 3(4.9)	79 2.89±1.3 2 3(32.1 / 32.9) 2(2.5)	0.078 1.000 0.252 0.171
Footwear protection	157 2.62±1.39 1(26.7 / 28.0) 8(4.8)	21 3.38±1.5 0 4.5*(27.3 / 28.6) 1(4.5)	59 2.80±1.4 2 3(27.9 / 28.8) 2(3.3)	77 2.29±1.2 3 1(32.1 / 33.8) 4(4.9)	0.002 0.267 0.003 0.089
Face shield	161 4.20±1.10 5(54.5 / 55.9) 4(2.4)	22 4.36±0.9 5 5(54.5 / 55.0) 0	60 4.20±1.0 4 5(54.1 / 55.0) 1(1.6)	79 4.16±1.1 8 5(55.6 / 57.0) 2(2.5)	0.754 1.000 1.000 1.000

The implementation of the Ministerial Order No.828 of May 15, 2020 [8] proved challenging due to several factors:

- Additional expenses during a financially difficult period (M=4.04, Mode 5=47.9%)
- Increased prices of dental equipment and supplies (M=4.00, Mode 5=50.9%)
- Uncertainties surrounding the protocol's guidelines (M=3.85, Mode 5=39.4%)
- Shortages of necessary equipment and products (M=3.81, Mode 5=38.2%)
- Enforcement of measures or equipment deemed unnecessary by practitioners (M=3.81, Mode 5=36.4%).

A comparative statistical analysis of two sample groups, one satisfied (S) and one dissatisfied (Ns) with the protocol, revealed significant discrepancies in their perceptions. These include ambiguities in the protocol (S vs Ns = 0.016) and the enforcement of unnecessary measures (S vs Ns = 0.02). Additionally, those satisfied with the protocol (S) viewed the additional expenses as justified, while those dissatisfied (Ns) considered them unjustified (S vs Ns = 0.027).

Oral Pathology

Regarding the aggravation of the pathology in the oral sphere, the study participants indicated the dental conditions as those that evolved unfavorably during the isolation period (M=3.75). Periodontal diseases (M=3.48) and surgical conditions (M=3.40) also worsened without specific treatment. Orthodontic treatments were not influenced by this period (M=2.64). There are no statistically significant differences of opinion between the three surveyed samples.

The degree of infection and vaccination prophylaxis

The resumption of activity in dental offices after protective measures and the rules provided in the protocol issued by the authorities resulted in an infection rate below 50% among dentists (43.87%). Doctors who considered the protocol appropriate have a higher infection rate (40%) compared to those who declared themselves unsatisfied with the rules imposed by the authorities (32.89%).

The national immunization campaign by vaccination against the SARS-Cov-2 virus benefited from a positive response from the doctors participating in our study, which resulted in an increased vaccination rate (90.09%-minimum one dose of vaccine). There were no significant statistical differences among the three groups at the first two vaccine doses (S=25% Vs Ns=29.33%). The differences appear at the third vaccine dose, in the sense that those with a positive perception of the protocol showed a greater acceptance of the booster dose (S=65% VsNs=54.67%).

Table 4. The degree of infection and vaccination prophylaxis

		N(%)	S 22	A 61	NS 81	P-value
Have you tested positive during this entire period?	No	87(56.13)	12(60.00)	24(41.38)	51(67.11)	0.006
	Yes	68(43.87)	8(40.00)	34(58.62)	25(32.89)	
Are you vaccinated?	No	14(9.09)	1(5.00)	5(8.62)	8(10.67)	0.966
	a dose	8(5.19)	1(5.00)	3(5.17)	4(5.33)	
	2 doses	41(26.62)	5(25.00)	14(24.14)	22(29.33)	
	3 doses	91(59.09)	13(65.00)	36(62.07)	41(54.67)	

DISCUSSIONS

Following a two-month suspension due to the SARS-CoV-2 pandemic, dental offices in Romania resumed operations under strict regulations. A cross-sectional study assessed dentists' perceptions of the mandatory safety measures introduced. Most respondents (40.6% to 43.2%) found the increased protective equipment for medical staff highly effective in preventing infection. However, additional protective measures for patients were viewed less favorably due to high costs and limited availability. Temperature screening and telephone triage, including rescheduling patients with symptoms such as temperatures over 37.2°C were useful. Avoiding certain treatments, rated as minimally useful by 34.5% to 37.0% of dentists, raised ethical concerns due to delayed care. The study highlights the positive perception of the new protocols but notes challenges related to equipment costs and waste management.

Dentists generally agree on increasing protective equipment for medical personnel during the SARS-CoV-2 pandemic, particularly N95 or FFP2/FFP3 masks and face shields [10-13]. These were seen as highly effective in preventing airborne transmission and contamination. However, opinions vary on other measures based on overall satisfaction with the protocol [11-14]. Disposable gowns and protective footwear were viewed as less useful, with coveralls considered cumbersome and offering minimal benefit. The study highlights the need to prioritize essential protective gear while minimizing unnecessary, burdensome equipment [10-14].

The strict implementation of the regulation protocol for dental treatments during the SARS-CoV-2 pandemic posed significant challenges, particularly due to socio-economic hardships [15,16]. Increased costs for protective equipment, driven by high demand, disrupted supply chains, and inflated prices,

added financial strain to dental offices facing economic difficulties after a two-month closure [16-18]. Dentists expressed frustration over the lack of necessary equipment, competition with the state for supplies, and ambiguous protocol guidelines. Unnecessary measures, like UV lamps and shoe sterilization, further complicated compliance [19,20]. Overall, 49.4% of respondents found the protocol unsatisfactory, and 37.2% deemed it merely acceptable, echoing dissatisfaction seen in similar studies globally. Protective measures in dental practices during the SARS-CoV-2 pandemic posed significant challenges, with physical discomfort from the equipment being the most acutely felt negative effect (M=4.08) by doctors. Increased stress levels (M=3.77) and deterioration in mental and emotional well-being (M=3.24) also emerged as key concerns. Similar studies from countries like Germany [21], England [15,22], and the USA [20] reported excessive sweating, breathing difficulties, and headaches from prolonged use of protective gear. Despite these hardships, the study participants perceived workplace stress as moderate, demonstrating resilience in managing the crisis.

Physical discomfort, increased stress, and difficult working conditions during the SARS-CoV-2 pandemic negatively impacted the mental and emotional dentists' well-being [20,23,24], as confirmed by our study. Contributing factors included fear of infection, financial challenges, protocol difficulties, and equipment shortages. Dentists reported moderate levels of anxiety and stress but generally overcame these issues without psychotherapy. Extended work hours (M=3.46) and reduced patient numbers (M=3.17) were other negative effects, explained by time-consuming protective measures. Financial strain (M=3.17) from reduced patient flow and increased treatment costs (M=3.45) was widely felt. However, teamwork (M=2.34) and patient relations (M=2.29) remained positive. The postponement of dental treatments worsened odontological (M=3.48) and surgical conditions (M=3.40), while orthodontic issues (M=2.64) were less affected, similar to other studies [25-27]. In June 2022, 2 years and 3 months after the global SARS-CoV-2 pandemic was declared, the infection rate among dentists in our study reached 43.87%.

Official Romanian data indicated a 15% infection rate in the general population and 20% in Sibiu County, suggesting a twofold higher infection rate among dentists [28]. However, caution is advised in interpreting these comparisons due to methodological differences, as official figures only account for PCR-tested patients, excluding rapid tests and unreported cases [29]. Literature on infection rates among healthcare professionals during the pandemic is scarce, with most data gathered early in the pandemic. A meta-analysis by Schwartz K.M. revealed a higher number of studies (19-65.5%) conducted in the pre-vaccination phase, with only 6.8% initiated in 2022. Our data align with findings from a 2022 study in the Czech Republic [30], where the infection rate among dentists was 48.5%, compared to 49.9% in the general population. A study from Brazil in May 2021 reported a 27% infection rate among dentists [31].

Dentistry, with its high exposure risk, likely contributed to increased infection rates among medical personnel. Despite significant challenges—discomfort from protective equipment, physical and mental strain, financial difficulties, and extended work hours—dentists demonstrated a strong positive response to vaccination. A high immunization rate of 90.09% (at least one dose) was recorded among study participants, compared to just 41.8% in the general population. Studies from the Czech Republic (85.8%) [30], Brazil (96%) [31], and Canada (89.4%) [32] similarly reported high vaccination rates among dentists. Additionally,

26.62% of the respondents had received the second vaccine dose, while 59.09% had taken the third, highlighting the profession's acceptance of vaccination as a protective measure despite vaccine efficacy controversies. While the results reflect the perceptions of dentists in Sibiu County and cannot be generalized across Romania, the study offers useful insights and recommendations for future healthcare responses.

CONCLUSIONS

The study highlights dentists' dissatisfaction with the rigid pandemic protocols, emphasizing the need for periodic reevaluation and flexibility, especially in equipment shortages. Key protective measures, like specialized masks and face shields, were deemed essential, while other equipment could vary based on the treatment performed. The lack of clear guidance for adapting protocols to different circumstances was a major concern.

Economic support was also insufficient, given the increased costs and office closures. Despite these challenges, dentists demonstrated resilience, maintaining safety and high vaccination rates. The study underscores the importance of better communication with healthcare authorities and improved preparedness for future crises.

Conflict of interest: the authors declare no conflict of interest associated with this paper.

Institutional Review Board Statement: the study was conducted according to the guidelines of the Declaration of Helsinki and approved by the Ethics Committee of SC Algocalm SRL, Târgu-Mures, Romania, 930/06.05.2024.

Informed Consent Statement: informed consent was obtained from all subjects involved in the study.

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