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# STUDY ON THE ETHICAL AND SAFETY ASPECTS AMONG ROMANIAN DENTAL HEALTHCARE PROFESSIONALS DURING COVID-19 PANDEMIC

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**Abstract:** The COVID-19 virus has a predominantly respiratory transmission through aerosol and droplets; therefore, dentistry represents a medical profession with high risk-exposure, both for dental professionals and for patients. Under these circumstances, the main aim of the present study is to evaluate the perception of a group of dentists (n=67) on the recommended safety measures for preventing and limiting the transmission of this virus; moreover, the participants' point of view on the need for further scientific research on infection management protocols was assessed. Data was collected via an on-line questionnaire and statistically analysed. The results of this study highlighted that personal protective equipment is considered by 65.7% of the participants the most efficient safety measure related to COVID-19 virus, along with the careful planning of proper disinfection periods in-between scheduled patients. Most participants (89.6%) also agreed with the need for further research on these issues, mostly on the cost/benefit ratio of PPE equipment.

**Keywords:** pandemic, Romanian dental profession, ethics.

## INTRODUCTION

Since the end of 2019 untill present, the SARS-COV 2 virus has generated worldwide an unprecedented pandemic in the last 100 years. COVID-19 disease has been a great challenge for all professions worldwide and its treatment and spread control are of vital importance. One of the most affected profession by the effects of the pandemic is the dental healthcare profession. All dentists have an important mission in preventing and limiting the transmission of this virus [1].

Contacts with Hepatitis B, Hepatitis C or HIV infected patients represent just a part of the potential risks faced by medical staff in dentistry daily practice [2]. Since the SARS-COV 2 virus appeared, it has been stated that dentistry is one of the most exposed professions in relationship with Covid-19, as long as the majority of dental procedures are associated with exposure to saliva, blood and can generate of a large number of aerosols [3, 4].

In this context, the risk of cross infection may be high between dental practitioners and patients. The standard protective measures in daily clinical work should be effective enough to prevent the spread of COVID-19 pandemia; this is difficult to achieve especially when patients are in the incubation period, unaware by the fact that they are infected, or when they choose to conceal their infection [5].

The interaction between viruses and saliva is a complex biological process. Human saliva is abundant of biologically active components, such as proline-rich proteins, mucins MG1 and MG2, and gp340. These components interact with pathogens and cause multiple influences on their biological behaviour [6].

Both, worldwide and in Romania, dental professionals have been affected in many ways by

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the effects of the COVID-19 pandemic, including at the level of their economic and financial status. Also, approaching patients, interacting and communicating with them has acquired new coordinates, thus outlining even an imminent socio-cultural change. In these specific circumstances, rigorous preventive measures and guidelines for patient management are needed, therefore we can practice this noble medical profession in best conditions for our patients and for ourselves.

The aim of this study was to assess, by the means of an on-line questionnaire, the opinion of Romanian dental professionals on safety measures in relation with COVID-19 pandemic. An additional purpose of our study was to determine participants' perspective on the need of further scientific research regarding the development of new technologies for preventing and limiting the transmission of COVID-19 virus.

## MATERIAL AND METHOD

We consulted the scientific literature data published in the last 6 month (March 2020 – august 2020), in order to identify the main directions of interest concerning the ethical and safety measures related to SARS – COV 2 virus, that were indicated for dental professionals. The literature search included also recent studies on development of new techniques and equipment that can help to implement more efficient protective measures for the entire dental staff and for our patients.

In this study a number of 67 dentists were included (n=67). The data were registered between the 8th and 15th of October 2020. The including criteria were: professional status - active dental professionals; employees or employers in private dental clinics; dental practice location - urban area; professional experience at least 1 year. Data were collected using a questionnaire, administrated as a Google forms, sent via email. The time needed to fulfil the questionnaire was of maximum 10 minutes. The survey contained seventeen questions, that were developed after reviewing relevant literature data and after checking the international guidelines [1, 2]. The questions were divided in three sections, depending on the approached subject: 1. social and demographic data of the participants in the study (5 questions; 2. protective measures adopted in dental clinics during COVID-19 pandemic and the necessity to change the therapeutic approach (9 questions); 3. need of further scientific research oriented towards the development of new technologies for protective and safety measures in dentistry (3 questions).

All the data were analyzed using IBM SPSS Statistics 25. Quantitative variables were tested for normal distribution using the Shapiro-Wilk Test and were written as averages with standard deviations or medians with interpercentile ranges. Categorical variables were written as counts or percentages. Quantitative variables were tested using Mann-Whitney U tests because of their non-parametric distribution and all existent correlations were demonstrated using Spearman's rho Correlations, while categorical variables were tested using Fisher's Exact tests.

## RESULTS

From the total of 67 participants in this study, most of them were women (70.1%), employed at a dental clinic (88.1%) and part of a medical team of 4-10 doctors (38.8%) or 2-3 doctors (35.8%). Only 11.9% of the doctors were owners of a dental clinic, where they actually work. The average age was 31.21 ± 6.67 (with a median age of 29) and the average medical experience in the field of dentistry was 5.6 ± 6.84 years (with a median period of 3 years), as it can be seen in Table 1. When asked if periodical screening of their patients for COVID-19 is important in the period of the study, 100% of the participants responded affirmatively.

Corresponding to questions regarding the recommended protective measures adopted in dental clinics during COVID-19 pandemic, a score from 1 to 10 points was assigned for every response (1 point meaning the lowest importance, 10 points meaning the highest importance). Data show that the participants estimated that most of the measures have moderate to high importance in protecting medical staff and patients (an average score over 7 points was registered for most of the measures). The measured perceived by the participants to be the most important were represented by the usage of an adequate personal protective equipment (average score: 9.15 ± 1.559 points, median = 10 points) and by planning periods for disinfection between scheduled patients (average score: 8.73 ± 2.049 points, median = 10 points). The least important measures perceived by the participants were represented by the application of rapid tests (average score: 7.06 ± 2.907 points, median = 8 points), limiting of aerosol generating procedures (average score: 7.25 ± 2.976 points, median = 8 points) and temperature monitoring (average score: 7.84 ± 2.157 points, median = 8 points), as it can be seen in Table 2.

The analyse of participants' responses regarding the need for changing the therapeutic approach of

the patients showed that 65.7% of the participants responded that using only PPE is enough for the protection of medical staff and/or patients against COVID-19 and only 4.5% considered that is it necessary to change the therapeutic approach by limiting the aerosol generating procedures. However, most of the participants agreed that further research about the cost/benefit ratio of PPE equipment is needed (89.6%); also, 88.1% of participants considered that scientific research is needed for developing and testing new equipment in order to limit aerosol generating procedures, as well as for developing new systems of dental teleassistance (70.1%), as it can be seen in Table 3.

Table 4 and Figures 1,2 show the comparison between the importance scores for different protective measures adopted in dental clinics during COVID-19 pandemic and genders. Shapiro-Wilk tests show that distribution of the scores is non-parametric in one or both genders ($p<0.05$). According to the Mann-Whitney U tests, it is shown that female participants have assigned a significantly higher score to the importance for limiting of AGP (median score = 9 points (IQR: 6-10)) in comparison to male participants (median score = 6.5 points (IQR: 3.25-8)) ($p=0.014$)

**Table 1.** Distribution of the data observed in the assessed medical staff

| **Demographic data** | **Average ± SD (Median – IQR)** | **Range** |
|---|---|---|
| Age | 31.21 ± 6.67 (29 (27-32)) | 24-52 |
| Years of service | 5.6 ± 6.84 (3 (1.5-7)) | 0-37 |
| **Sex** | **N** | **%** |
| Female | 47 | 70.1% |
| Male | 20 | 29.9% |
| ***Dental clinic - Status*** | **N** | **%** |
| Employee | 59 | 88.1% |
| Owner | 8 | 11.9% |
| ***Medical staff - Clinic*** | **N** | **%** |
| 2-3 doctors | 24 | 35.8% |
| 4-10 doctors | 26 | 38.8% |
| > 10 doctors | 17 | 25.4% |

**Table 2.** Average values of importance scores related to the recommended protective measures adopted in dental clinics during COVID-19 pandemic

| **Importance score – protective measures adopted in dental clinics** | **Average ± SD** | **Median – IQR** |
|---|---|---|
| Standard survey upon arrival at the clinic | 7.9 ± 2.487 | 9 (6-10) |
| Temperature monitoring | 7.84 ± 2.157 | 8 (6-10) |
| Rapid tests at the clinic | 7.06 ± 2.907 | 8 (5-10) |
| Communication by e-mail/telephonic interview before arrival at the clinic | 8.27 ± 2.233 | 9 (6-10) |
| Personal protective equipment (PPE) | 9.15 ± 1.559 | 10 (9-10) |
| Limiting of Aerosol generating procedures (AGP) | 7.25 ± 2.976 | 8 (6-10) |
| Planning periods for disinfection between scheduled patients | 8.73 ± 2.049 | 10 (8-10) |

**Table 3.** Distribution of the participants according to their opinion about the therapeutic approach and the necessity of future studies related to COVID-19

| ***Question: Do you consider that it is necessary to change the therapeutic approach of the patients?*** | **N** | **%** |
|---|---|---|
| No, I work normally using PPE | 44 | 65.7% |
| Yes, but only for urgent cases | 20 | 29.9% |
| Yes, by limiting Aerosol generating procedures (AGP) | 3 | 4.5% |
| ***Is further research needed about cost/benefit ratio of PPE equipment?*** | **N** | **%** |
| No | 7 | 10.4% |
| Yes | 60 | 89.6% |
| ***Is further research needed for developing and testing new equipment for limiting aerosol generating procedures?*** | **N** | **%** |
| No | 8 | 11.9% |
| Yes | 59 | 88.1% |
| ***Is further research needed for developing new systems of dental teleassistance?*** | **N** | **%** |
| No | 20 | 29.9% |
| Yes | 47 | 70.1% |

**Table 4.** Comparison of importance scores for different protective measures adopted in dental clinics during COVID-19 pandemic with genders

| ***Gender – Comparison of importance score for limiting of aerosol generating procedures (AGP)*** | **Average ± SD** | **Median (IQR)** | **Average rank** | **P-value*** |
|---|---|---|---|---|
| Female (**p<0.001****) | 7.79 ± 2.843 | 9 (6-10) | 37.74 | **0.014** |
| Male (p=0.126**) | 6 ± 2.974 | 6.5 (3.25-8) | 25.20 | |
| ***Gender – Comparison of importance score for planned periods for disinfection between scheduled patients*** | **Average ± SD** | **Median (IQR)** | **Average rank** | **P-value*** |
| Female (**p<0.001****) | 9.3 ± 1.284 | 10 (9-10) | 38.59 | **0.001** |
| Male (**p=0.001****) | 7.4 ± 2.817 | 8 (6.25-10) | 23.23 | |

*Mann-Whitney U Test, **Shapiro-Wilk Test.

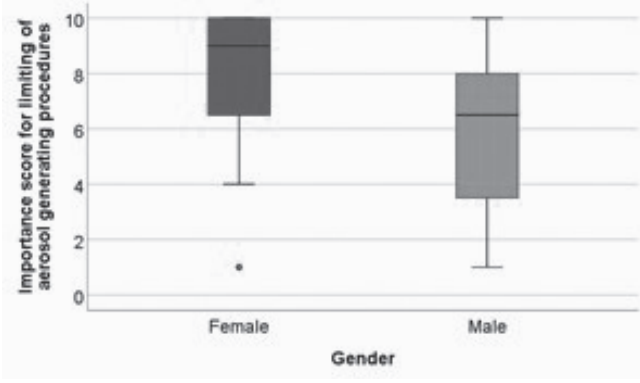


**Figure 1.** Comparison between genders and the importance score for limiting of aerosol generating procedures (AGP).

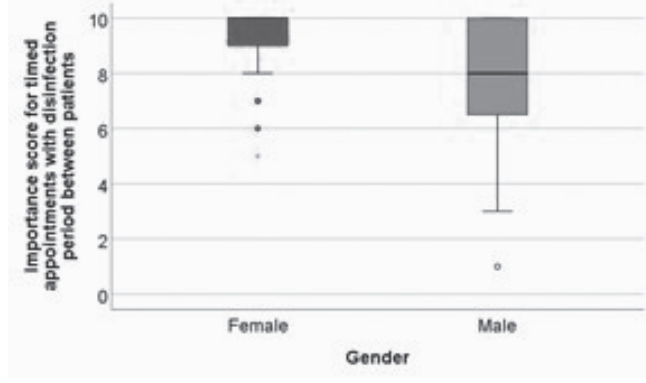


**Figure 2.** Comparison between genders and the importance score for timed appointments with disinfection period between patients.

and also a significantly higher score to the importance for timed appointments: females - (median score = 10 points (IQR: 9-10) *vs.* males – (median score = 8 points (IQR: 6.25-10)) (p=0.001).

Table 5 and Figures 3,4 show the comparison between age and importance score for planned periods for disinfection between scheduled patients and the responses that concern further research for developing new equipment in dentistry. Shapiro-Wilk tests show that distribution of the scores is non-parametric in one or both answer groups (p<0.05). According to the Mann-Whitney U tests, it is shown that participants who responded affirmatively have assigned a significantly higher score to the importance for timed appointments with disinfection period between patients (median score = 10 points (IQR: 8-10)) in comparison to participants who responded negatively (median score = 7 points (IQR: 3.5-9.75)) (p=0.009), however their age was not significantly different whether they responded affirmatively or not (p=0174).

The comparison between age and importance score for limiting of aerosol generating procedures (AGP) with the responses regarding further research for developing new systems of dental teleassistance is shown in Table 6 and Figures 5, 6. Shapiro-Wilk tests show that distribution of the scores is non-parametric in one or both answer groups (p<0.05). According to the Mann-Whitney U tests, it is shown that participants who responded affirmatively have assigned a significantly higher score to the importance for limiting of aerosol generating procedures (AGP) (median score = 9 points (IQR: 7-10)) in comparison to participants who responded negatively (median score = 6 points (IQR: 5.25-9)) (p=0.020), however their age was not significantly different whether they responded affirmatively or not (p=0.428).

Table 7 and Figures 7, 8 show the comparison between the importance scores for different recommended protective measures adopted in dental clinics during COVID-19 pandemic and the participants' professional status (employers or employees). Shapiro-Wilk tests show that distribution of the scores is non-parametric in one or both groups (p<0.05). According to the Mann-Whitney U tests, it is shown that when both scores were compared there weren't any significant differences between the groups (p>0.05), as such being an owner or an employee had not any significant effect over the opinion about the analysed measures.

The correlation between gender and the responses concerning further research about the cost/benefit ratio of PPE equipment is presented in Table 8 and Figure 9. The data shows that according to Fisher's test, female participants were significantly

**Table 5.** Comparison of age and importance score for planned periods for disinfection between scheduled patients and the opinion on the need of further scientific research

| ***Further research for new equipment – Comparison of importance score for planned periods for disinfection between scheduled patients*** | **Average ± SD** | **Median (IQR)** | **Average rank** | **P-value*** |
|---|---|---|---|---|
| No (p=0.427**) | 6.5 ± 3.295 | 7 (3.5-9.75) | 19.00 | **0.009** |
| Yes (**p<0.001**) | 9.03 ± 1.64 | 10 (8-10) | 36.03 | |
| ***Further research for new equipment – Comparison of age*** | **Average ± SD** | **Median (IQR)** | **Average rank** | **P-value*** |
| No (**p=0.004**) | 33.13 ± 6.875 | 30 (28.5-39.25) | 42.75 | 0.174 |
| Yes (**p<0.001**) | 30.95 ± 6.658 | 29 (26-32) | 32.81 | |

*Mann-Whitney U Test, **Shapiro-Wilk Test.

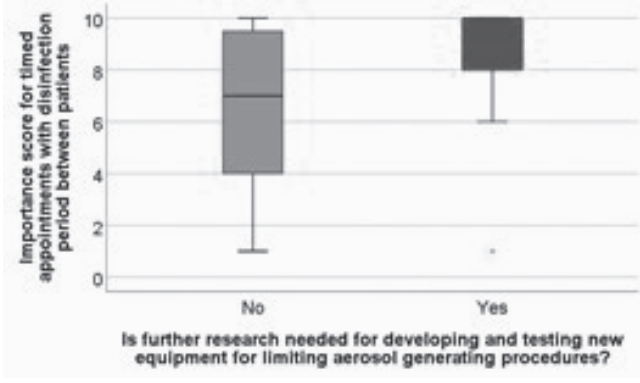


**Figure 3.** Comparison of importance score for planned periods for disinfection between scheduled patients who answered whether further research for developing new equipment in dentistry is needed or not.

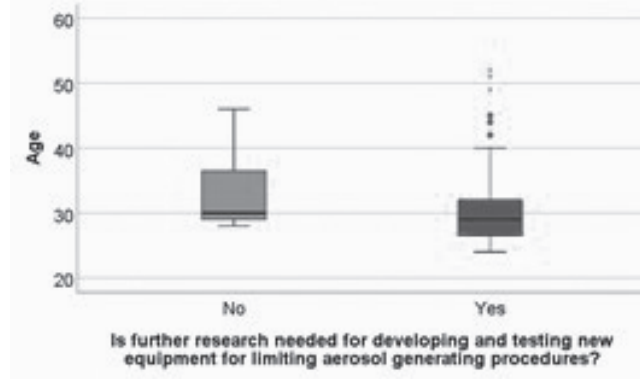


**Figure 4.** Comparison of age between participants who answered whether further research for developing new equipment in dentistry is needed or not.

**Table 6.** Comparison of age and importance score for limiting of aerosol generating procedures (AGP) between participants who answered whether further research for developing new systems of dental teleassistance is needed or not

| ***Further research for new systems of dental teleassistance – Comparison of importance score for limiting of aerosol generating procedures (AGP)*** | **Average ± SD** | **Median (IQR)** | **Average rank** | **P-value*** |
|---|---|---|---|---|
| No (p=0.067**) | 6.35 ± 2.7 | 6 (5.25-9) | 25.70 | **0.020** |
| Yes (**p<0.001**) | 7.64 ± 3.032 | 9 (7-10) | 37.53 | |
| ***Further research for new systems of dental teleassistance – Comparison of age*** | **Average ± SD** | **Median (IQR)** | **Average rank** | **P-value*** |
| No (**p=0.001**) | 30.8 ± 4.808 | 30 (27.5-31.75) | 36.88 | 0.428 |
| Yes (**p<0.001**) | 31.38 ± 7.359 | 28 (27-32) | 32.78 | |

*Mann-Whitney U Test, **Shapiro-Wilk Test.

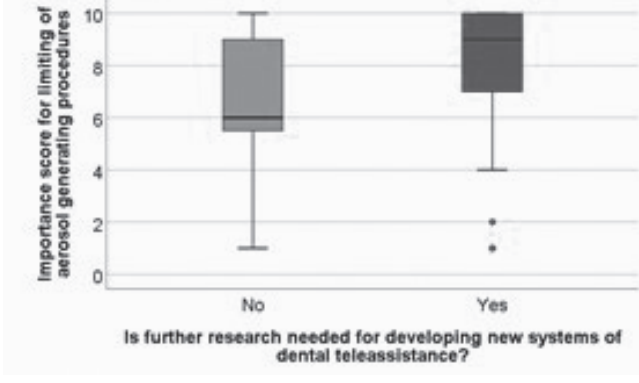


**Figure 5.** Comparison of importance score for limiting of aerosol generating procedures (AGP) between participants who answered whether further research for developing new systems of dental teleassistance is needed or not.

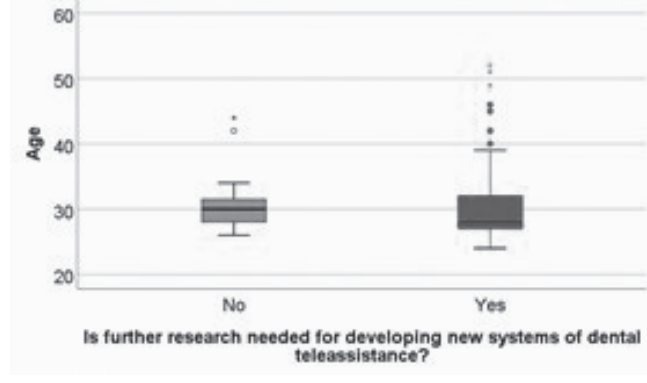


**Figure 6.** Comparison of age between participants who answered whether further research for developing new systems of dental teleassistance is needed or not.

**Table 7.** Comparison of importance scores for different recommended protective measures and the participants' professional status

| ***Dental clinic status – Comparison of importance score for limiting of aerosol generating procedures (AGP)*** | **Average ± SD** | **Median (IQR)** | **Average rank** | **P-value*** |
|---|---|---|---|---|
| Employee (**p<0.001****) | 7.27 ± 3 | 8 (6-10) | 34.25 | 0.774 |
| Owner (p=0.184**) | 7.13 ± 3 | 7.5 (5.5-9.75) | 32.19 | |
| ***Dental clinic status – Comparison of importance score for timed appointments with disinfection period between patients*** | **Average ± SD** | **Median (IQR)** | **Average rank** | **P-value*** |
| Employee (**p<0.001****) | 8.8 ± 1.883 | 10 (8-10) | 34.02 | 0.983 |
| Owner (**p=0.001****) | 8.25 ± 3.151 | 10 (7.25-10) | 33.88 | |

*Mann-Whitney U Test, **Shapiro-Wilk Test.

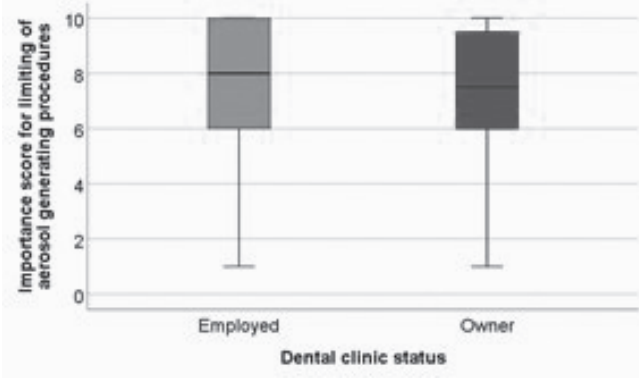


**Figure 7.** Comparison between participants' professional status and importance score for limiting of aerosol generating procedures (AGP).

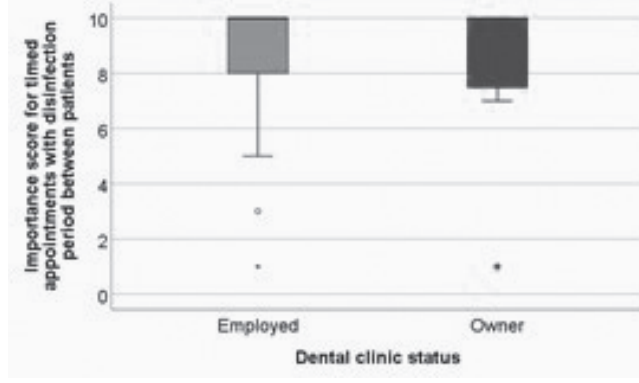


**Figure 8.** Comparison between participants' professional status and importance score for planned periods for disinfection between scheduled patients.

**Table 8.** Observation of the association between gender and the response for whether further research about the cost/benefit ratio of PPE equipment is needed or not

| ***Gender / Response*** | **Female N (%)** | **Male N (%)** | **P-value*** |
|---|---|---|---|
| No | 2 (4.3%) | 5 (25%) | **0.021** |
| Yes | 45 (95.7%) | 15 (75%) | |

*Fisher's Exact Test.

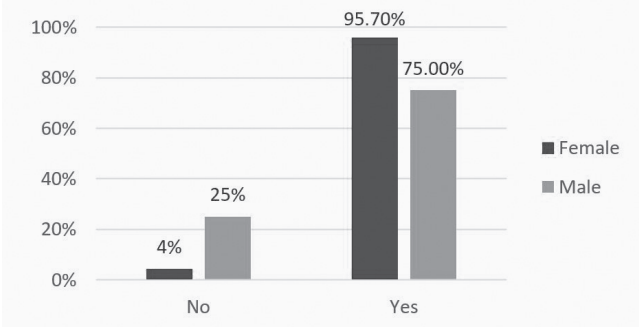


**Figure 9.** Observation of the association between gender and the response for whether further research about the cost/benefit ratio of PPE equipment is needed or not.

more frequently interested in future research about the cost/benefit ratio of PPE equipment (95.7%) than male participants (75%) (p=0.021).

Table 9 shows the correlations between all importance scores allocated for the protective measures analysed in the study. All the importance scores have a non-parametric distribution according to the Shapiro-Wilk test (p<0.001). The results show multiple significant positive correlations between the importance scores, as explained below:

- Participants that assigned a higher importance score for having a standard survey at the dental clinic also assigned a significantly higher score for temperature monitoring (p<0.001, R=0.600), for having a possibility to communicate with the patients by e-mail/telephone before arrival (p<0.001, R=0.593), for having an adequate PPE (p<0.001, R=0.561), for limiting AGP (p=0.006, R=0.330) and for having timed appointments with disinfection period between patients (p<0.001, R=0.498);

- Participants that assigned a higher importance score for temperature monitoring also assigned a significantly higher score for having a possibility to communicate with the patients by e-mail/telephone before arrival (p=0.001, R=0.412), for having an adequate PPE (p=0.001, R=0.413), for limiting AGP (p=0.014, R=0.298) and having timed appointments with disinfection period between patients (p<0.001, R=0.521);

- Participants that assigned a higher importance score for having rapid tests at the clinic also assigned a significantly higher score for having a

**Table 9.** Correlations between all importance scores for the protective measures analysed in the study

| Correlation* | Standard survey | Temperature monitoring | Rapid tests | E-mail/ Telephone | Adequate PPE | Limiting AGP | Timed appointments |
|---|---|---|---|---|---|---|---|
| **Standard survey** | - | **<0.001 R=0.600** | 0.159 R=0.174 | **<0.001 R=0.593** | **<0.001 R=0.561** | **0.006 R=0.330** | **<0.001 R=0.498** |
| **Temperature monitoring** | **<0.001 R=0.600** | - | 0.483 R=0.087 | **0.001 R=0.412** | **0.001 R=0.413** | **0.014 R=0.298** | **<0.001 R=0.521** |
| **Rapid tests** | 0.159 R=0.174 | 0.483 R=0.087 | - | **0.005 R=0.338** | **0.016 R=0.292** | 0.727 R= -0.043 | **0.009 R=0.316** |
| **E-mail/ Telephone** | **<0.001 R=0.593** | **0.001 R=0.412** | **0.005 R=0.338** | - | **<0.001 R=0.475** | **0.047 R=0.243** | **<0.001 R=0.582** |
| **Adequate PPE** | **<0.001 R=0.561** | **0.001 R=0.413** | **0.016 R=0.292** | **<0.001 R=0.475** | - | **0.004 R=0.346** | **<0.001 R=0.482** |
| **Limiting AGP** | **0.006 R=0.330** | **0.014 R=0.298** | 0.727 R= -0.043 | **0.047 R=0.243** | **0.004 R=0.346** | - | **<0.001 R=0.476** |
| **Timed appointments** | **<0.001 R=0.498** | **<0.001 R=0.521** | **0.009 R=0.316** | **<0.001 R=0.582** | **<0.001 R=0.482** | **<0.001 R=0.476** | - |

*Spearman's rho Correlation Coefficient.

possibility to communicate with the patients by e-mail/ telephone before arrival (p=0.005, R=0.338), for having an adequate PPE (p=0.016, R=0.292) and for having timed appointments with disinfection period between patients (p=0.009, R=0.316);

- Participants that assigned a higher importance score for having a possibility to communicate with the patients by e-mail/telephone before arrival also assigned a significantly higher score for having an adequate PPE (p<0.001, R=0.475), for limiting AGP (p=0.047, R=0.243) and for having timed appointments with disinfection period between patients (p<0.001, R=0.582);

- Participants that assigned a higher importance score for having an adequate PPE also assigned a significantly higher score for limiting AGP (p=0.004, R=0.346) and for having timed appointments with disinfection period between patients (p<0.001, R=0.482);

- Participants that assigned a higher importance score for limiting AGP also assigned a significantly higher score for having timed appointments with disinfection period between patients (p<0.001, R=0.476);

According to the presented results, it can be stated that participants considered that multiple approach and diverse efficiency measures must simultaneously be taken into account in order to increase the protection of medical staff and patients against COVID-19 infections.

## DISCUSSION

Since practicing dentistry involves working in close proximity to the patient, dental professionals and auxiliary dental staff are on high risk on aerosol exposure, which current scientific evidence highlight being the main source of COVID-19 viral propagation [7, 8, 3]. Consequently, guideline principles when planning dental treatment during COVID -19 pandemic need to be adhered for safe practice.

The use of special personal protective equipment is nowadays part of daily routine dentistry, being meant to protect operators from blood and saliva. The importance of the barrier protection equipment has been stated by the European Centre for Disease Prevention and Control(https://www.ecdc.europa.eu/sites/default/files/documents/COVID-19 guidancewearing - and - removing – personal – protective – equipment healthcare - settings-updated.pdf) [9] to fundamentally protect operators from the SARS-CoV-2 contagion. Among the equipment, the use of masks, goggles, long-sleeved water-resistant gowns, and gloves is mandatory when treating patients, as every healthy patient is potentially contagious. This setting should be easily found in every dental clinic (Izetti, 2020).

The article published by Khader Y *et al.* in 2020 [10], revealed that Jordanian dentists, were aware of COVID-19 symptoms, mode of transmission, infection control and measures in dental clinics. More than half of the 368 dentists (n=203, 55.2%) reported that COVID-19 symptoms often are resolved with time and do not require any special treatment. Regarding dentists' precautionary actions in the dental clinic, a total of 275 dentists (74.7%) believed that it was necessary to ask patients to sit far from each other, wear masks while in the waiting room, and wash hands before getting in the dental chair to decrease disease transmission, while 80 dentists (21.7%) believed that this was not necessary and could cause panic among patients. This conclusions most

probably are linked to fact that the study was conducted and published early this year. Yet, 92,9 % of participants were aware of the necessity of wearing personal protective equipment such as dental goggles, masks, and gloves and 82,6% of them were aware that all health staff members should wear protective clothing [10].

On the other hand, the results obtained in our study pointed out that 65.7% of the participants agreed that using only PPE is enough for the protection of medical staff and/or patients against COVID-19. However, most of the participants (89.6%) agreed that further scientific research about the cost/benefit ratio of PPE equipment is needed.

Regarding dentists' attitude towards other preventive measures, Brambilla E *et al.* (2020) [11] highlighted that a double - check triage appeared to be a common denominator among the guidelines for the control of cross-infection in dentistry. This procedure implies a first triage carried out by telephone (patients are asked about their state of health) and a second triage, performed at the arrival at the dental practice. This specific way of approaching patients allow dentist to avoid treating both asymptomatic and pre-symptomatic patients in unequipped dental clinics. In the same line, by analysing the results of our study, we noticed that the participants assigned a significantly higher score for having a possibility to communicate with the patients by e-mail/telephone before arrival ($p=0.005$, $R=0.338$) and also for having an adequate PPE ($p=0.016$, $R=0.292$).

As our study shown, the most important preventive measure among the recommended ones for increased protection efficiency against COVID-19 while performing dental procedures was, as perceived by the participants, the use of adequate personal protective equipment (average score: 9.15 ± 1.559 points, median = 10 points), while limiting aerosol generating procedures was less valued (average score: 7.25 ± 2.976 points, median = 8 points).

Indu M *et al.*, in a study published in May 2020 [12] regarding the assessment of knowledge, attitude and practice dental care during COVID-19 Pandemic in India, found that only non- aerosol generating emergency procedures were preferred by 83.3% (n =110) of the dental healthcare professionals; the results also indicated that 87.1% (n= 115) of dentist would like to have a full set of personal protective equipment (gloves, goggles, N95 mask, face shield, head cover, gown, shoe cover) while treating asymptomatic patients with positive travel/contact history.

With respect to international recommendation for infection prevention and control practices during the COVID-19 pandemic [9], related to the screening and triage of all patients entering the dental practice, the implementing and use of PPE, the implementation of tele-dentistry etc, our study also focused on participant's opinion regarding the need for further scientific studies in this domain. The obtained answers confirmed that the majority of participants agreed with the need for further scientific research on these issues, as follows: the cost/benefit ratio of PPE equipment (89.6% of participants), developing and testing new equipment for limiting aerosol generating procedures (88.1% of participants) and developing new systems of dental teleassistance (70.1% of participants). No other studies on this topic have been found in international scientific databases yet, which makes these results more valuable in predicting both dentists' expectations and their great confidence in scientific research outcomes.
This study has some limitations; the survey was conducted among dental professionals in located only in urban area and the number of participants was limited. Further scientific studies are needed to establish methods that will improve the protective and safety measures in dentistry during the COVID-19 Pandemic.

National and international guidelines should be elaborated to make sure that dentists are well informed and aware of best practices.

**In conclusion,** with all the limitations of this study, especially the reduced number of subjects involved, due to some reticence in answering the questionnaire, we estimate that relevant aspects regarding the perception of Romanian dental healthcare professionals towards the COVID-19 pandemic were collected in this study. As a conclusion, the participants appreciated that the most important measures in preventing and limiting the transmission of this virus are represented by the usage of an adequate personal protective equipment and by planning periods for disinfection between scheduled patients; a smaller percentage of the participants considered that is it necessary to change the therapeutic approach by limiting the aerosol generating procedures. Most participants considered that further scientific research is needed for the development and implementation of new technologies in the field of protection and safety in dentistry.

**Conflict of interest**

The authors declare that they have no conflict of interest.

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