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Original Research Article

Change of decontamination habits at Moroccan dental offices and laboratories during the COVID Pandemic: An epidemiological study

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ABSTRACT

Introduction: The objective of our study was to evaluate the change in the habits of dentists and dental technicians in the city of Casablanca, Morocco, in relation to the decontamination of fixed dental prosthesis works during the pandemic of COVID.
Materials and Methods: A descriptive cross-sectional study was conducted among 106 dentists and 30 dental technicians by using an anonymous questionnaire.
Results: 50% of the dentists have adopted strict and precise protocols for decontamination and disinfection of dental works compared to 76.7% of the dental technicians. 31.1% of the dentists decided to use a more virucidal disinfectant product versus 33.3% of the technicians. 32.1% of the dentists did not change their disinfection/decontamination habits for prosthetic works in the COVID-19 era versus 6.7% of dental technicians. 92.5% of the dentists and 93.3% of the dental technicians invested more in disinfectants during the COVID period.
Conclusion: Many prosthodontists changed their habits during COVID crisis compared to dentists who disinfected prosthetic pieces even before the pandemic. Dentists like technicians adopted stricter and more precise protocols and invested more in disinfectants products during the pandemic. A standardized decontamination protocol should be established and applied and the use of chair-side computer-aided design and manufacturing (CAD-CAM) helps to control cross-infection.

1. Introduction

An epidemic of pneumonia emerged in Wuhan city (Hubei province, China) in December 2019. On 9 January 2020, the discovery of a new coronavirus was officially announced by the Chinese health authorities and the World Health Organization (WHO). Morocco started to prepare for this, as soon as the first case was officially declared on its territory on 2 March 2020.[1]

Dentists and their patients are particularly exposed, especially through the inhalation of aerosols and droplets produced by rotating instruments and mixed with the saliva and blood of infected patients. It can remain in suspension for a long time before falling back onto the surrounding surfaces and it became sources of contamination through indirect contact, as do the instruments used for care.[2,3]

In order to carry out the fixed prosthesis works, dental practitioners and the dental technicians have to work simultaneously and in a coordinated manner, interspersed with fitting sessions in the patient's mouths. This means that the fixed prosthesis is covered in saliva, and often in blood. Moreover, the oral cavity is a naturally septic environment, so it is obvious that these prosthesis works are contaminated by multiple micro-organisms, including the recently discovered coronavirus, which is largely present in

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the vicinity of the pharynx and can be transmitted through this works. The prosthetic work is then transported to the prosthetic laboratory, thus out of the treatment room. The risk of dissemination of microorganisms is therefore major.[4–6]

To avoid any direct or cross-contamination, it is therefore essential to carefully decontaminate these works after each step. Due to a lack of knowledge, awareness or simply lack of time, this crucial operation may be poorly done or not done at all, with very harmful consequences.

The objective of our study was to evaluate the change of habits of dentists and dental technicians in the city of Casablanca in relation to the decontamination of fixed dental prosthesis works due to the pandemic of COVID-19.

2. Materials and Methods

This work is a cross-sectional descriptive analytical study. It was conducted in the city of Casablanca, which is the biggest city with the largest number of dentists in Morocco, using a questionnaire distributed directly and sent online to dentists and dental technicians.

The sample size was estimated using a statistical formula. We included 106 dentists and 30 prosthetists from the private sector. We obtained the list of doctors by contacting the national council of the dental profession by email. We included in our survey all dentists registered at the National Council of the Order of Dentists, practicing in the city of Casablanca and volunteering to participate to the survey. For the group of dental technicians, we obtained a list of laboratories in the region by contacting the National Union of Dental Prosthetists of Morocco and the dental directory by email. We included all prosthetists registered at the National Union of Dental Prosthetists of Morocco, practicing in Casablanca and accepting to participate to the survey.

For the validation of the questionnaire, a pre-survey was conducted over 3 days with 10 dentists and 5 dental technicians to assess comprehension, acceptability, calibration between interviewers, interview time and validity of the questions. The questionnaire was well understood by the participants with a completion time of 7 minutes. Initially, we created a common questionnaire for dental practices and prosthetic laboratories, but after the pre-survey, some participants rejected this combination (some questions were reserved for prosthetists or dentists), which led us to prepare two separate questionnaires. The first part of the validated questionnaires gathered demographic data, such as sex, age, and experience. The second part consisted of questions of 5 main sections with a total of 18 questions on the change of decontamination habits of prosthetic work after the coronavirus crisis. It was prepared and distributed to all participants.

For data collection, we visited and contacted dental technicians and dentists by phone or e-mail during opening hours. Following the COVID-19 pandemic we added the option of filling in the questionnaire remotely via the Google Forms platform to reduce contact between the interviewer and the respondent. The questionnaires were distributed and collected either physically by moving to the laboratories and dental practices or automatically by Google Forms.

Data entry and validation was done using Excel software, given the descriptive and non-analytical nature of the study.

3. Results

The decontamination habits of the prosthesis works in the era of COVID-19, the acceptance or not of patients tested positive to COVID-19, the realization or not of a training for the medical staff in disinfection in relation to COVID, the change of the, the means of protection used, and the investment in time of decontamination of the prosthesis works were investigated:

Table 1: Distribution of dentists according to the acceptance or not of COVID positive patients for prosthetic work.

COVID patient management and training	Frequency	Percentage (%)
No	63	59.4%
Yes, if no clinical signs	7	6.6%
Yes, after negative PCR test	20	18.9%
Yes, after several days of remission	26	24.5%
Others	4	3.8%

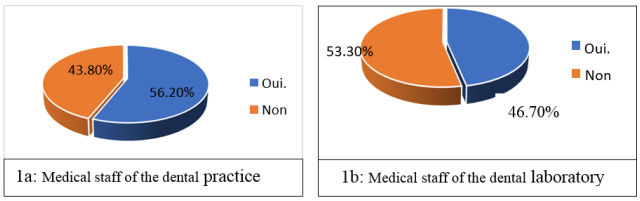

Fig. 1: a,b: Completion of disinfection training in relation to COVID-19

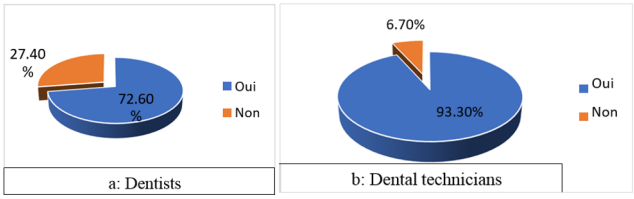

Fig. 2: a,b: Distribution of dentists and prosthetists according to whether or not they invested time in decontamination/disinfection of prosthetic work during the COVID-19 period.

Table 2: Changes in decontamination habits of prosthetic work in the COVID period in dental office.

Decontamination habits	Frequency	Percentage (%)
The use of strict and precise protocols for decontamination and disinfection of fixed prosthesis work.	53	50%
The use of a more viricidal disinfectant	33	31.1%
Increase in disinfection time	28	26.4%
No change	34	32.1%
Other	0	0%

Table 3: Changes in decontamination habits of prosthetic work in the COVID period in dental laboratory

	Frequency	Percentage (%)
The use of strict and precise protocols for decontamination and disinfection	23	76.7%
The use of a more virucidal disinfectant	10	33.3%
Increase in disinfection time	5	16.7%
No change	2	6.7%
Other	0	0%

Table 4: Protective measures used in dental practices before handling denture work.

	Frequency	Percentage (%)
FFP2 Mask	61	57.5%
Surgical Masque	34	32.1%
Protective visor or splash guard.	64	60.4%
Protective bonnet.	15	14.2%
Disposable plastic gown and overcoat.	67	63.2%
Gloves.	91	85.8%
Other	0	0

Table 5: Protective measures used in prosthetic laboratories before handling denture work.

	Frequency	Percentage (%)
FFP2 mask.	6	20%
Surgical mask.	21	70%
Protective visor or splash guard.	6	20%
Protective bonnet.	1	3.3%
Disposable plastic gown and overcoat.	5	16.7%
Gloves.	15	50%
Others.	0	0%

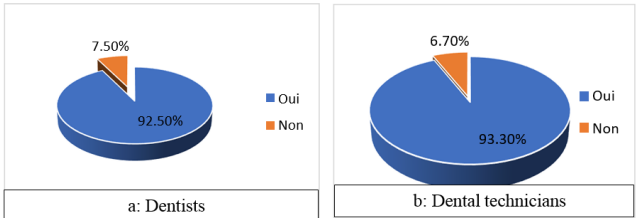

Fig. 3: a,b: Distribution of dentists according to investment in disinfectants during the COVID-19 period.

4. Discussion

We conducted a cross-sectional survey of 106 dentists and 30 dental technicians in Casablanca, Morocco. This work allowed us to evaluate the change in decontamination habits of fixed prosthesis works in the COVID period. In our survey, a number of problems were encountered during the survey. Due to the pandemic, the majority of dentists and dental technicians avoid filling in paper questionnaires. The level of education of the dental technicians in the sample was sometimes low, which made it difficult for the interviewer and respondent to get along. Some denture technicians had a low level of French language skills.

In our study, the majority of dentists refused to accept COVID-positive patients even in the absence of clinical signs, after a negative PCR test or after several days of remission. This shows that dentists are still afraid of being infected with COVID or perhaps they do not know how to manage the positive patients. These hypotheses were confirmed by looking at the training component, we found that only 56.20% of dentists versus 46.70% have undergone training in this sense.

The dental technicians have changed their prosthetic work disinfection habits compared to dentists. This can be explained by the fact that dentists had already adopted strict decontamination protocols for prosthetic work prior to the COVID pandemic. Dentists have adopted more strict and precise protocols for decontamination and disinfection In our study, in addition to the FFP2 masks commonly used by dentists, the use of disposable gloves (85.8%), plastic gowns and overcoats (63.2%) and goggles/visors (60.4%) were the most commonly used means. In contrast to dentists, we found that the majority of dental technicians used only surgical masks and gloves. Similar results were found in a study of 9247 dentists in the Lombardy region of Italy[7] where the use of FFP2 masks (54.84%), disposable gloves (93.22%), plastic gowns and overcoats (21.09%) and goggles/visors (91.28%) were the most used. According to a comparative study in Iran on infectious risk and personal protective equipment before and after the COVID-19 pandemic:[8]

1. There were significant changes in the use of personal protective equipment before and after the COVID-

19 pandemic. Non-wearing of masks by dentists was reduced from 4% before the pandemic to 0.8% after the pandemic. No one used an N95 mask before the pandemic. During the pandemic, N95 mask use increased to 46.5%.
2. 44.1% of dentists did not wear glasses before the pandemic. After the pandemic, this figure dropped to 1.6%.
3. 16.5% of dentists did not wear gloves before the COVID-19 pandemic, during the pandemic all dentists wore gloves.

For the protective measures used in dental offices before handling fixed prosthesis work, the dentist and his team must adopt strict and precise protocols for decontamination and disinfection of instruments, materials, and surfaces, in order to avoid infectious contagion and the spread of the COVID disease. To conduct our procedures with maximum safety in this time of health crisis, we must consider every patient as an asymptomatic carrier of the virus or other pathogens. Before handling prosthetic work, we propose the following protocol:[9,10]

1. Wearing of rigorous clothing
2. FFP2 mask or surgical mask
3. Protective visor or splash guard
4. Protective bonnet
5. Disposable plastic gown and overcoat
6. Gloves

5. Conclusion

The dental professionals are at high risk for exposure to the coronavirus and other organisms because of the direct and cross contamination. Therefore, preventive measures should be implemented by all the professionals. Respecting hygiene and asepsis in a prosthetic procedure is a behavior and a state of mind and every patient should be considered as a potential contaminant before and after the pandemic. In our study, we found that the professionals changed their decontamination habits and adopted strict protocols despite the lack of context- specific training.

6. Data Availability

The data are conserved in the fixed prosthesis department of the Faculty of Dentistry of Casablanca, University Hassan 2 of Casablanca Morocco.

7. Conflicts of Interest

The authors declare that they have no conflicts of interest.

8. Source of Funding

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