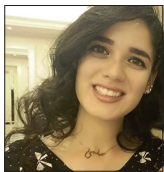


Original Article

The preventive measures adopted during dental practice by the dentists in a low-income country to prevent the transmission of COVID-19: A questionnaire-based survey

Safaa Shihabi¹, Salma Al Nesser¹, Omar Hamadah²

Departments of ¹Pediatric Dentistry and ²Oral Medicine, Damascus University, Al Mazzeh Street, Damascus, Syria, Syrian Arab Republic.



***Corresponding author:**

Salma Al Nesser,
Department of Pediatric
Dentistry, Damascus University,
Al Mazzeh Street, Damascus
- 3062, Syria, Syrian Arab
Republic.

salma.alnesser93@gmail.com

Received : 22 August 2020
Accepted : 20 October 2020
Published : 29 May 2021

DOI
10.25259/IJMS_231_2020

Quick Response Code:



ABSTRACT

Objectives: A novel coronavirus was first proclaimed in Hubei province, China, 213 countries worldwide also became an epicenter of the virus until June 17, 2020. The dental team has a high risk of infection as a result of the specificity of their procedures. The aim of this questionnaire was to estimate the preventive measures and the awareness methods that may be adopted by the dentists to prevent or reduce the transmission of COVID-19.

Material and Methods: The questionnaire was an electronic survey contained 23 questions, which were designed based on the instruction given for dental setting by CDC during COVID-19 pandemic; the respondents in this study were dental practitioners in Syria.

Results: A total of 1013 dentists have responded to this survey 61% of the participants treated only the emergent treatment, 84% of them wear facial masks, while the prevalence for other protective equipment was low. The majority of the participants schedule the appointments as there is only one patient in the waiting room. More than half of the dentists sterilize the patients' hands before and after the dental treatment, and 59% of them choose 70% ethyl alcohol as a disinfectant. Most of the respondents use dental mouthwashes before the initiation of the treatment. Almost three-quarters of the dentists use high vacuum. Only 15% of dentists sterilize the dental handpieces in the autoclaves after each patient. Most of dentists educate their patients about preventive methods.

Conclusion: Based on these results, the Syrian dentists should take more strict measures during dental practice.

Keywords: Severe acute respiratory syndrome coronavirus 2, Low-income country, Infection prevention and control, Centers for Disease Control and Prevention

INTRODUCTION

A novel coronavirus (SARS-Cov-2) caused severe pneumonia (COVID-19) explored in Wuhan city, Hubei province, China, and then spread rapidly to other provinces and countries.^[1] On June 17, 2020, 213 countries have reported cases of COVID-19.^[2,3] The World Health Organization declared the COVID-19 as a public health emergency of international concern.^[4] The most common and typical clinical symptoms of the patients with coronavirus disease were fatigue, fever (88.7%), and coughing (67.8%); however, nausea and diarrhea (5% and 3.8%, respectively) were uncommon. The radiological findings showed that 56.4% of the patients have ground-glass opacity, and 51.8% have bilateral patchy shadowing in CT chest. Laboratory findings showed

This is an open-access article distributed under the terms of the Creative Commons Attribution-Non Commercial-Share Alike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as the author is credited and the new creations are licensed under the identical terms.

©2021 Published by Scientific Scholar on behalf of Indian Journal of Medical Sciences

that lymphocytes were present in 83.2% of the patients.^[5] The most common transmission route of coronavirus is direct contact with the coughing and sneezing patient's droplet. Furthermore, it can also be transmitted from person to person by direct or indirect contact. The dental staff has the risk of coronavirus infection due to the specificity of their procedures such as face-to-face communication, direct contact with saliva, and micro-organism inhalation that may be remained in the air for a long time.^[6] Therefore, infection control and preventive measures should be very strict during dental diagnosis and treatment, especially that doctors get infected with COVID-19 more.^[7]

The aim of this study was to estimate the infection prevention and control (IPC) that may be adopted for both patients and dental team in the Syrian Arab Republic (SAR) dental clinics.

MATERIAL AND METHODS

A cross-sectional study was done using an online questionnaire. Ethical approval for this study was obtained from the Damascus University Ethical committee with the ID 2432020. The questionnaire was sent electronically to dental practitioners in (SAR) at a randomly selection, in March 2020 for 45 days. The study sample is composed of 1013 dentists who are 25 years old and above and have the willingness and desire to participate in this survey. STROBE statement for reporting cross-sectional studies was applied in this research.

The questionnaire consists of 20 questions to evaluate the infection control and preventive measures that may prevent the transmission of coronavirus disease (COVID-19) during dental treatment. The questionnaire was filled after an explanation about the study and its purposes.

The questionnaire had five sections. In the first section, the participants should fill the sex, age, and the specific specialization.

In the second section, the dentists were asked if the dental treatment was limited to only emergency cases or all usual treatments. They were also asked about the prevention methods that were used during dental treatment to all of the medical and administrative staff, such as (mask, surgical gown, cover head, cover shoes, face shield, and plastic eyeglasses).

In the third section, the dentists' opinions about the roles of recording patients' fever, cleaning patients' hands with an alcohol-based hand rub, or with soap and water for 20 min in reducing disease spread were recorded. The dentists were also asked if they use eyeglasses, cover shoes, surgical gown, mouth wash, surgical suction, and rubber dam for patients during dental treatment.

In the fourth section, they were also asked questions related to their sterilization process of contaminated air, handpieces, dental chair, and waiting room.

Finally, in the fifth section, dentists were asked if they increase patients' awareness of the preventive measures that should be taken in their daily life to reduce the transmission of COVID-19.

RESULTS

After 30 days, 1013 dentists out of 23800 dentists registered in Syria have responded to this survey.

In the first section, regarding demographic data, 61% of the participants were males, most of the respondents were specialist dentists with 53% prevalence. The highest frequency of age was between 25 and 35 years (73%) [Table 1].

In the second section, regarding the procedures followed in the dental clinic after the announcement of the virus spreading, 61% of the participants treated the emergent cases only. About 84% of them wear facial masks, while the prevalence was 34% for surgical gowns, 40% for the cover head, 7% for cover shoes, 41% for a face shield, and 12% for plastic eyeglasses. Only 46% of the participants force both the dental and administrative staff to follow the previous preventive methods [Table 2].

In the third section, the procedures taken before, during, and after the dental treatment were assessed. The majority of the participants (83%) schedule the appointments, so there is only one patient in the waiting room. However, 62% do not measure the patient's fever before entering the dental clinic. Furthermore, 63% of the dentists sterilize the patients' hands before and after the dental treatment, and 59% of the participants choose 70% ethyl alcohol as a disinfectant [Table 3].

About 44% of the dentists were aware that the use of the cover shoes for patients is very essential in reducing virus spreading. The minority of the respondents provide the patient with surgical gown and plastic glasses (22% and 17%, respectively).

Table 1: Section 1: Demographic data for dentists.

Demographics	Frequency (%)
Gender	
Female	39
Male	61
Age group	
25–35 years	73
36–45 years	16
>45 years	11
Specialty	
General practitioner	47
Specialist	53

Most of the respondents use dental mouthwashes before the initiation of the treatment (70%), including 0.12% chlorhexidine gluconate (47%), 0.2% povidone-iodine (14%), and hydrogen peroxide (9%) [Table 3].

Although almost three-quarters of the dentists use high vacuum suction such as surgical ejectors, 73% do not use a dental rubber dam, and thus 77% of the latter allow the patient to spit in the spittoon [Table 3].

Table 2: Section 2: The procedures followed in the dental clinic.

Questions	Answers	Frequency
What are the treatments done in your dental clinic?	All regular cases	9
	Emergent cases only	61
	Stop all types of treatments	30
What are the protective methods used in the dental clinic?	Face mask	84
	Surgical gown	34
	Cover head	40
	Cover shoes	7
	Face shield	41
	Plastic eyeglasses	12
	All of the previous methods	19
To whom the protective methods are used in the dental clinic?	The dentist only	21
	The dentist and the dental assistants	46
	The whole dental and administrative staff	33

Table 3: Section 3: The procedures taken before and during the dental treatment.

Questions	Answers	Frequency (%)
How do you schedule your dental appointments in the waiting room?	one patient only	83
	Leaving at least 1 m between each patient	9
	I did not consider any safety distance or eliminating the number of patients	8
Do you measure the patient's fever before entering the dental clinic?	Yes	62
	No	38
When do you sterilize the patients' hands?	Before the dental treatment	13
	After the dental treatment	6
	Before and after the dental treatment	63
	I do not do this at all	18
What are the methods used to sterilize the patients' hands?	Ethyl alcohol in any concentration	6
	70% Ethyl alcohol	59
	Washing hands with water and soap for 20 seconds	35
Do you think that using cover shoes for patients helps in reducing the spread of COVID-19?	Yes	44
	No	19
	I do not know	36
Do you provide your patient a surgical gown?	Yes	78
	No	22
Do you provide your patient a protective eyeglasses?	Yes	17
	No	83
What is the type of mouthwash used before the initiation of the treatment?	Chlorhexidine gluconate 0.12%	47
	Povidone iodine 0.2%	14
	Hydrogen peroxide 1%	9
	I do not use any mouthwash	30
Do you use high vacuum suction such as surgical ejectors?	Yes	75
	No	25
Do you use a dental rubber dam to reduce the spreading of the aerosols?	Yes	27
	No	73
Do you allow your patient to spit in the spittoon when you do not use a rubber dam?	Yes	77
	No	23

In the fourth section, concerning the contaminated air, half of the respondents improve ventilation of the dental clinic regularly (51%), while 8% decontaminate air through special sterilizers, 24% use the previous techniques both. However, 10% of the participants do not use any technique to refresh air, and 7% do not know if air decontamination reduces the risk of COVID-19 transmission. Moreover, the highest frequency of the respondents (68%) decontaminates all the equipment in the dental clinic and the waiting room frequently after each patient. Only a minority of dentists sterilize the dental handpieces in the autoclaves after each patient (15%), while others decontaminate them for 60 s before wiping with either a surface sterilizer (33%) or with alcohol (13%) [Table 4].

In addition, only 48% of the respondents throw the dental wastes away after completing the treatment of each patient [Table 4].

In the last section, most of the dentists (84%) educate their patients about the preventive measures to reduce the transmission of novel COVID-19. Moreover, over half of the participants make their patients aware of the necessity of washing their toothbrushes and avoid contacting them with other toothbrushes [Table 5].

DISCUSSION

The speed and the response of coronavirus disease around the world are depended on health-care systems, economies, and political ideologies.^[8] Thus, SAR is considered to have a high prevalence spreading of SARS-COVID-2 due to its classification as a low-income country because of the Syrian crisis.

Such surveys can be beneficial when preventive measures about infectious diseases are outlining.

The results of this study revealed that 61% of the participants treated the emergent cases only since the Syrian government imposed a partial quarantine, including the closure of schools, universities, and non-essential shops. Moreover, the ministry of health recommended dentists to treat the emergent cases only, based on the Centers for Disease Control and Prevention (CDC).^[9]

According to international and local awareness for the transmission ways of SARS-COVID-2, almost half of the respondents in this study imposed all the dental and administrative staff to follow strict preventive measures

Table 4: Section 4: Decontamination of air and dental clinic.

Questions	Answers	Frequency (%)
What is the procedure done to reduce the risk of transmission through air?	Improve ventilation of the dental clinic regularly	51
	Decontaminate air through special sterilizers	8
	I use the previous techniques both	24
	I do not use any technique to refresh air	10
	I do not know if air decontamination reduces the risk of COVID-19 transmission	7
What do you sterilize after finishing each dental treatment?	The dental chair only	68
	The whole dental equipment with the whole room content	32
How do you sterilize the dental handpieces after each patient?	By autoclave	15
	By decontamination with alcohol and wiping it immediately	13
	By decontamination with surface sterilizer and wiping it immediately	21
	By decontamination with alcohol for 60 s and then wiping it	18
	By decontamination with surface sterilizer for 60 s and then wiping it	33
When do you get rid of the patients' wastes?	Immediately after finishing the dental treatment.	48
	At the end of the day after the last dental appointment.	52

Table 5: Section 5: Dentist role in raising awareness among patients.

Questions	Answers	Frequency (%)
Do you educate your patients about preventive measures in order to reduce the transmission of novel COVID-19?	Yes	84
	No	14
	I do not know what are preventive measures	2
Do you aware your patients on the necessity to wash their toothbrushes and avoid the contact with them with other toothbrushes?	Yes	57
	No	43

during dental treatment. Most of them used facial masks (84%) since it is considered as a usual procedure even before the pandemic, whereas the use of face shields, cover heads, cover shoes, and plastic eyeglasses was low, and this could be a result of its high cost under the economic sanctions.

About 83% of the participants schedule the appointments that are only one patient in the waiting room, and this was according to the WHO precautions to avoid crowded places and to maintain a physical distance at least 1 m.^[10] About 62% of the participants do not measure the patients' fever before entering the dental clinic, despite it is considered as the most common symptom (88.7%); therefore, it is advisable for the dentists to know all of COVID-19 symptoms to take the required precautions when meeting such patients.^[5,6] Furthermore, 63% of the dentists sterilize the patients' hands before and after the dental treatment. About 59% out of them choose 70% ethyl alcohol as a disinfectant, while 35% preferred washing hands with soap and water for 20 s. Both ways are considered an efficient option in killing viruses according to the WHO recommendations.^[10] This study was consisted of Hassenow *et al.* study, which was also conducted in Syrian Arab Republic.^[11]

More than half of the respondents were not aware to use cover shoes for the patients before entering the dental clinic; therefore, awareness of this point should be more highlighted since coronavirus can survive on the sole of the shoes for up to 5 days^[12] due to its ability to land on the ground surface by gravity or airflow effect.^[13]

The majority of the respondents use dental mouthwashes before the initiation of the treatment (70%), including 0.12% chlorhexidine gluconate (47%) due to its virucidal effect, while the prevalence of using 0.2% povidone-iodine was (14%), and 9% for hydrogen peroxide. Recently many researchers showed that the antiviral action for some antiseptic rinses, including chlorhexidine, may be limited since the lipid outer layer of coronavirus would probably be protected against such agents.^[14]

Although almost three quarters of the dentists use high vacuum suction such as surgical ejectors due to its highly role in reducing respiratory droplets and this would minimize the virus counts in aerosol and surfaces, therefore decreasing prevalence rate in the dental clinic, 73% do not use dental rubber dam, and this might be according to the application time taken.

Even 15% of dentists sterilize the dental handpieces in the autoclaves after each patient, and this might be due to prolonged time. Yet 33% decontaminate them for 60 seconds before wiping with a surface sterilizer and thus might be due to easiness.

After the end of the treatment, half of the respondents improve ventilation of the dental clinic regularly (51%) and thus ensure air movement in clean-to-less-clean flow direction according to CDC consideration.^[9]

Finally, most of the dentists (84%) educate their patients by informing them about the transmission routes and preventive measures of COVID-19. The percentage may become highly if the concerned authorities and government make all of the medical staff, including dentists, as a part of the awareness campaign.

CONCLUSION

Based on these results, the Syrians dentist's practitioners should take more strict measures and awareness before and after dental practice to avoid pandemic outbreaks, and the health system collapses that may be a hard fact, especially in low-income countries such as SAR.

Declaration of patient consent

Patient's consent not required as there are no patients in this study.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

Nil.

REFERENCES

- Zhu N, Zhang D, Wang W, Li X, Yang B, Song J, *et al.* A novel Coronavirus from patients with pneumonia in China, 2019. *N Engl J Med* 2020;382:727-33.
- Geoscheme UN. Reported Cases and Deaths by Country, Territory, or Conveyance; 2020. Available from: <https://www.worldometers.info/coronavirus/>. [Last accessed on 2020 Jul 23].
- Kumar S. Use of cluster analysis to monitor novel Coronavirus-19 infections in Maharashtra, India. *Indian J Med Sci* 2020;72:44-8.
- Moriarty LF. Public health responses to COVID-19 outbreaks on cruise ships-worldwide, February-March 2020. *MMWR Morb Mortal Wkly Rep* 2020;69:347-52.
- Guan WJ, Ni ZY, Hu Y, Liang WH, Ou CQ, He JX, *et al.* Clinical characteristics of Coronavirus disease 2019 in China. *N Engl J Med* 2020;382:1708-20.
- Peng X, Xu X, Li Y, Cheng L, Zhou X, Ren B. Transmission routes of 2019-nCoV and controls in dental practice. *Int J Oral Sci* 2020;12:1-6.
- Gore GA. Doctors and COVID-19: Why we need to be a wise human first! *Indian J Med Sci* 2020;72:41-3.
- Coulthard P. Dentistry and Coronavirus (COVID-19)-moral decision-making. *Br Dent J* 2020;228:503-5.
- CDC. Guidance for Dental Settings; 2020. Available from: <https://www.cdc.gov/coronavirus/2019-ncov/hcp/dental-settings.html>. [Last accessed on 2020 Jul 29].

10. World Health Organization .Coronavirus Disease (COVID-19) Advise for the Public; 2020. Available from: <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/advice-for-public>. [Last accessed on 2020 Aug 02].
11. Hessenow R, Hesenow S, Mohammad Y, Hammadyeh AR, Ghattas K, Ali L. Evaluation of preventive procedures followed by the medical staff against COVID-19 in the Syrian Arab Republic: A cross-sectional study. *Indian J Med Sci* 2020;72:49-57.
12. METRO. Coronavirus Can Survive on Shoes for up to Five Days, Disease Specialists Warn; 2020. Available from: <https://www.metro.co.uk/2020/03/26/coronavirus-can-survive-shoes-five-days-disease-specialists-warn-12459505>. [Last accessed on 2020 Aug 02].
13. COVID 19: Coronavirus Can Spread through Soles of Shoes, Study Reveals; 2020. Available from: https://www.nzherald.co.nz/lifestyle/news/article.cfm?c_id=6&objectid=12324634. [Last accessed on 2020 Aug 03].
14. Addy M. Toothbrushing against Coronavirus. *Br Dent J* 2020;228:487-7.

How to cite this article: Shihabi S, Al Nesser S, Hamadah O. The preventive measures adopted during dental practice by the dentists in a low-income country to prevent the transmission of COVID-19: A questionnaire-based survey. *Indian J Med Sci* 2021;73(1):15-20.

NEWS

2nd Annual Conference of Asian Cardio Oncology Society

27th to 29th August 2021

Program Director – Dr Vivek Agarwala, Dept of Medical Oncology, NH Hospital,

Kolkata drvivekagarwala@gmail.com 88792-22875

Conference Managers – Kavina Creations

kashish@kavinacreations.com 9819025850