

## EVALUATION OF PREVENTIVE PROCEDURES FOLLOWED BY SAUDI DENTISTS AGAINST COVID-19

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**Abstract:** The study aimed to identify the investigation of the situation on the preventive measures that Saudi dental practitioners followed during the Coronavirus (Covid-19) pandemic in four major cities in Saudi Arabia, which are the capital, Riyadh, Jeddah, Makkah and Madinah, and the study was limited to current dental practitioners who provide medical care In hospitals and dental clinics, and the study sample did not include university professors or dental students, and through this study we sought to know the preventive measures that dental practitioners followed by following the recommendations and guidelines of the World Health Organization regarding preventive measures for dental professionals to prevent Coronavirus (Covid-19). While the questionnaire was designed using the G-Forms application, and the questionnaire was sent to remote dental practitioners via the Internet through applications and social networking sites, total of study sample (525), 235males and 290 females

The results of the study showed that Saudi dentists followed the guidelines and recommendations of the World Health Organization to confront the Coronavirus (Covid-19), as Saudi dentists showed a high commitment to wearing mask, wearing gloves, sterilizing all medical devices before and after providing patient care, Directing all persons attending the clinic to wear masks, asked all patients upon attending if they have a symptoms consistent with COVID-19, Handwashing with soap and water or alcohol-based hand sanitizer for everyone, checking the patient's temperature by digital thermometer, and screening patients by virtual/remote technology or telephone.

While the results showed a decline in some preventive measures followed by Saudi dentists such as: wearing protective outerwear, using rubber dams, use a mouthwash that contains chlorhexidine, and wearing shoe covers.

Based on the results of the study, the percentage of self-evaluation of preventive measures followed by dental practitioners ranged from 70-80%

**Keywords:** Covid-19, dentistry, preventive procedures, dentists, Saudi Arabia.

تقييم الإجراءات الوقائية المتبعة من قبل أطباء الأسنان السعوديون تجاه كوفيد-19

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**الملخص:** هدفت الدراسة إلى معرفة المواقف والإجراءات الوقائية التي اتبعتها أطباء الأسنان السعوديون خلال جائحة فيروس كورونا (كوفيد-19) في أربع مدن رئيسية في السعودية، العاصمة الرياض وجدة ومكة المكرمة والمدينة المنورة، واقتصرت عينة الدراسة على ممارسي طب الأسنان الذين يقدمون الرعاية الطبية الفموية في المستشفيات وعيادات الأسنان، وقد سعت الدراسة إلى معرفة الإجراءات الوقائية التي اتبعتها أطباء الأسنان وفقاً لتوصيات واعتبارات منظمة الصحة العالمية بشأن التدابير الوقائية لأخصائيي الأسنان للوقاية من فيروس كورونا (كوفيد-19). في حين تم تصميم الاستبانة بشكل آلي باستخدام تطبيق G-Forms ومن ثم إرساله عن بُعد عبر مجموعات أطباء الأسنان وحساباتهم على مواقع التواصل الاجتماعي وكذا عبر البريد الإلكتروني، وقد بلغ إجمالي عينة الدراسة (525)، 235 ذكورا و290 إناث.

أظهرت النتائج ارتفاعاً عالياً في اتباع الإجراءات الوقائية التالية: ارتداء الكمامة، ارتداء القفازات، وتعقيم كافة الأجهزة الطبية قبل وبعد تقديم الرعاية للمرضى، وإلزام جميع الأشخاص المتواجدين في المرفق الطبي (العيادة/ المستشفى) إلى ارتداء الكمامة، بالإضافة إلى سؤال جميع المرضى عند الحضور إلى المرفق عن أي أعراض تتوافق مع COVID-19، وإصدار التعليمات لجميع المتواجدين داخل المرفق الصحي بضرورة غسل وتعقيم أيديهم، والتحقق من درجة حرارة المرضى باستخدام جهاز قياس الحرارة الرقمي، وفحص المرضى عن بُعد (بالبهاتف أو التكنولوجيا) حول أعراض كوفيد-19 قبل حضورهم إلى المرفق الصحي لتلقي الرعاية المناسبة. بينما أظهرت النتائج تراجع أطباء الأسنان في اتباع الأدوات الوقائية التالية: ارتداء ملابس الوقاية الخارجية، واستخدام السدود المطاطية للفم، واستخدام غسول الفم الذي يحتوي على الكلوروكسيدين، وارتداء أغطية الأذن. بناءً على نتائج الدراسة، يمكننا تقييم الإجراءات الوقائية التي قام أطباء الأسنان باتباعها بما يتناسب مع التوصيات والاعتبارات التي أصدرتها منظمة الصحة العالمية كانت عالية وبنسبة تتراوح من 70-80%.

**الكلمات المفتاحية:** الإجراءات الوقائية، فيروس كورونا (كوفيد-19)، أطباء الأسنان السعوديون.

## INTRODUCTION:

In December 2019, the world witnessed the emergence of a health (Covid-19) pandemic disrupted many areas of life, and its start was in Wuhan, Hubei Province, China, where a cluster of pneumonia cases occurred, and quickly spread to countries by travelers<sup>1</sup>. To limit virus transmission, governments around the world have taken unprecedented measures. Entire cities, regions and countries have shut down, travel bans, schools and universities closed, stores are out of stock, and all economic, cultural and social activities have ceased. Never before in recent history has there been a health problem such an overwhelming impact on society. Health (or rather the threat of ill health) has become the preoccupation that precedes all other issues.<sup>2</sup>

The oral cavity is the entrance and exit to the body, and saliva is supposed to play a role in early diagnosis and close transmission of infection in infectious diseases, Dental practitioners are likely at greater risk. Since Coronavirus has a significant affinity for ACE2 receptors, which are more often

expressed in the salivary glands than in the respiratory mucosa, saliva acts as an essential reservoir for the transport of droplets, the production of drops, stains, and stains is high during dental procedures with a high and low speed handpiece, 3-way syringe and ultrasound scaler.<sup>3</sup>

Some viral strains have been detected in saliva for up to 29 days after infection.<sup>4</sup> A person infected with Coronavirus may experience symptoms of infection after an incubation period of about 2 to 14 days (there are rarely cases of incubation periods of 29 days), during which time the infected person can still transmit the infection to other people.<sup>5</sup> And infection could occur with droplets emitted during talking, coughing, or sneezing and also through aerosols used during clinical procedures<sup>6 14</sup>

Older adults are significantly affected by COVID-19, including physiological changes associated with aging, reduced an immune function and multiple diseases that expose elderly people to be more likely to develop<sup>7</sup>. And elderly may have increase problems in the gums, and teeth, which requires the dentist to provide the oral health care for them. Meanwhile, efforts to ensure they receive an appropriate treatment in a timely fashion is complicated by the fact that older people are more likely to develop serious complications or die from Covid-19 infection.<sup>8</sup>

In March 2020, the American Dental Association (ADA) recommended that all dental practices be shut down in everything except for emergencies, Because many carriers of the coronavirus lack symptoms, it is impossible to know who is safe for a treatment<sup>9</sup>. Oral health diseases are common to affect those who are affected by Covid-19, which demand more oral health care.<sup>10</sup> The covid-19 infection remaining viable in aerosols throughout the duration of three hours.<sup>11</sup>

All patients ought to be dealt with as possibly infected since as it were symptomatic people show fever and breathing symptoms. During the widespread, rules have recommended shirking of dental medications, excluding some cases. patients with a body temperature of (99.5 °F) and influenced by COVID-19 cannot be treated in a dental clinic and ought to be restricted to their domestic or hospitalized in the event that they display serious side effects. Each proficient dentist must get the transmission pathways of Sars-CoV-2 and must perform all basic methods in a way that anticipates the spread of disease.<sup>12</sup>

The COVID-19 outbreak is a reminder that dental/oral must always be careful to protect against the spread of diseases<sup>13</sup> During the COVID-19 pandemic, effective prevention of oral problems and self-care remain a high priority. Patients should be given advice through remote consultation or social media channels on maintaining good oral hygiene.<sup>14</sup>

## MATERIALS AND METHODS

### The study sample:

This cross-sectional study was designed to measure the preventive measures taken by dentists who provide health care in hospitals and dental clinics during the Coronavirus pandemic in four major cities in Saudi Arabia, namely Riyadh, Jeddah, Makkah and Madinah, the study sample did not include all dental professionals such as: dental academic teachers, university dental students, and dental graduates (They could not work)

This study was conducted in this study was conducted in October 2020.

The total number of participants in this study were dental practitioners (n = 525), including 235 males and 290 females, and the confidentiality and privacy of the opinions of the participants in this study were taken into consideration.

### The questionnaire:

The questionnaire form was designed by the G-Forms application, while the form was designed according to the terms of recommendations and instructions on the preventive measures recommended for dental professionals to avoid infection with the virus, relying on the guidelines and recommendations of the World Health Organization in conjunction. The questionnaire was distributed remotely to Special groups of Saudi dentists in the four aforementioned cities, and these groups are known to dental professionals in social media applications and websites: Telegram, WhatsApp, Facebook, in addition to following the participants via phone and e-mail to investigate.

### Questionnaire questions:

The questionnaire questions included 15 questions that were formulated in line with the needs and objectives of the study and the field of dentistry, and the questionnaire questions were formulated in a self-constructive manner based on the Considerations for the provision of essential oral health services in the context of COVID-19 by World Health Organization in conjunction. It has also been used some items from the questionnaire in the study referred to in No. (1) in the reference list.

The study questionnaire is designed as follows:

The first type: questions that accept once choice such as gender, age, specialization, city, qualification, as well as the percentage of the participant's self-evaluation, and the purpose of that was to determine the actual value of answering those questions that require specific answers only.

The second type: questions that accept multiple answers regarding the preventive tools, methods and procedures used to prevent the spread of the virus, in order to allow the participants to choose the most important item of preventive measures that are followed to prevent the virus.

### Statistical analysis:

Participants were grouped using the G-Forms application, and after completing the collection of responses and posts, the answers were analyzed using the SPSS program to find the frequencies and percentages of the items and paragraphs of the questionnaire.

## RESULTS

**Table (1) The Characteristics of study sample, 525 Dentists**

no	Characteristics	Characteristics	N	%
1	Sex	Male	235	44.76
		Female	290	55.24
2	Age	20-30	244	46.48
		31-40	145	27.62
		41-50	113	21.52
		51-60	23	4.38
3	City	Riyadh	238	45.33
		Jeddah	144	27.43
		Madinah	76	14.48
		Makkah	67	12.76
4	Specialty	General Dentistry	234	44.57
		Prosthodontics	97	18.48
		Orthodontics	70	13.33
		Oral Maxillofacial Surgery	41	7.81
		Pediatric Dentistry	25	4.76
		Endodontics	23	4.38
		Periodontics	19	3.62
		Other	16	3.05
5	Work Setting	Private	322	61.33
		Government	203	38.67

## DISCUSSION

The study sample was (525) participants (235) males, (290) females, and the ratio of males to females was 44.76%/55.24% The study sample was limited to dentists who practice oral health care.

The most age group who participated in responding to the questionnaire is the age group that is from 20-30 years with a rate of 46.48%

While the lowest age group participating in this questionnaire is the age group from 50-60 years, at a rate of 4.38%. while the city of Riyadh ranked first in the percentage of participants, reaching 45.33%, and city of Makkah is the least participant at 12.76%.

The specialists of "general dentistry" the most participants with 44.57%, while the fewest participants' specialists in periodontics, 3.62%. Participants from the private sector were 61.33%, the government sector 38.67%.

**Table (2) The opinion of the study sample about the preventive measures taken**

	<i>The procedure followed</i>	<i>n</i>	<i>%</i>
1	<b>The important Sources of information for prevention measures</b>		
	WHO guidelines	465	88.57
	Scientific sources (articles, studies, researches, reports,...)	334	65.33
	Media (TV & Radio programs, Social media posts)	145	27.62
2	<b>Procedures of Screening/checking Patients for COVID-19 Symptoms</b>		
	Screening patients by virtual/remote technology or telephone	478	90.85
	Checking the patient's temperature by digital thermometer.	489	93.14
	Asking all patients upon attending if they have a symptoms consistent with COVID-19	509	96.95
3	<b>Considerations for the provision of essential oral health</b>		
	Reducing working days	401	76.38
	Reducing working hours	411	78.29
	Reducing the number of staff and medical assistants (shift system)	398	75.81
	Receive a limited number of patients (for critical cases)	409	77.90
4	<b>Important advice and instructions for assistants, staff and patients</b>		
	Handwashing with soap and water or alcohol-based hand sanitizer for everyone	498	94.86
	Wearing masks is essential for everyone	519	98.86
	Opening windows and doors for ventilation	354	67.43
	Placing posters and prevention flyers	434	82.67
	Social distancing is important for everyone	409	77.90
5	<b>Personal Protective Equipment</b>		
	Wearing gloves	523	99.62
	Wearing masks	524	99.81
	Wearing medical uniform	465	88.57
	Wearing surgical gowns	295	56.19
	Wearing medical goggles	358	68.19
	Wearing face shields	385	73.33
	Wearing Head covers	345	65.71
	Wearing protective outerwear	167	31.81
	Wearing the shoe covers	145	27.62
6	<b>Sterilization and Waste disposal procedures</b>		
	Sterilizing all medical devices before and after providing patient care	517	98.48
	Continuous sterilization for entrances, floors, and walls	381	72.57
	Continuous sterilization of the desks, chairs and surfaces	359	68.38
	Waste disposal	497	94.66

	<i>The procedure followed</i>	<i>n</i>	<i>%</i>
7	<b>Protective procedures followed to in waiting room</b>		
	Receive patients according to a chronic schedule	461	87.81
	Limiting the reception of companions of patients except when necessary	456	86.86
	Private waiting rooms for the elderly and diabetics	359	68.38
8	<b>Protective procedures during providing oral health care</b>		
	Using a Rubber dam	213	40.57
	Using High-Volume Suction	453	86.29
	Use a mouthwash that contains chlorhexidine	301	57.33
9	<b>Why should preventive measures be applied in dentistry specifically?</b>		
	Dentistry is one of the most exposed professions to respiratory diseases eg covid-19	484	92.19
	The dentist's association with patients from all segments of society	445	84.76
	To ensure safer care for diabetes dental patients and elderly	418	79.62

Figure 1: shows the opinion of study sample

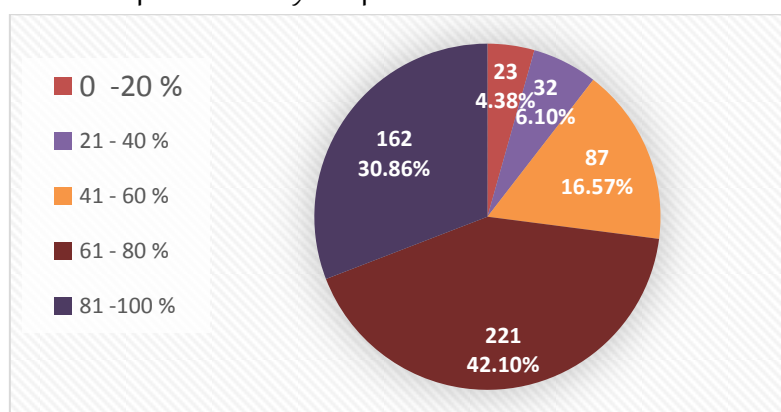


Figure (1) shows the opinion of the study sample (there a personal evaluation) for the preventive measures taken

Study results indicate for the sources that dentists relied on to obtain reliable information about preventive procedures and measures, they varied between the World Health Organization website, scientific references and the media, as 88.57% of the study sample indicated their reliance on the WHO website directly. While 65.33% of the study sample based on their information through scientific references such as: (articles, studies, research and reports ...) while 27.62% of the study sample obtained their information from the media such as: (TV & radio, social media).

This reflects the awareness of dentists in obtaining more reliable information. As a result of deteriorating conditions and the spread of conflicting information about the Coronavirus<sup>15</sup>.

"The purpose of address specific needs and considerations for essential oral health services in the context of COVID-19 in accordance with WHO operational guidance on maintaining essential health services".<sup>14 16</sup> These campaigns and articles have helped healthcare workers to protect themselves and their patients, and break the chain of disease spread<sup>1</sup>

The results have demonstrated a rise in the number of dentists who follow Procedures of Screening/checking Patients for COVID-19, Whether by virtual/remote technology or on arrival to the service oral health care facility.

This explains the knowledge of Saudi dentists about the considerations issued by the World Health Organization about: "Screen patients before their appointments either by virtual/remote technology or telephone"<sup>12</sup> The aim is to ensure that only patients requiring urgent or emergency receive treatment and that they have no symptoms suggestive of COVID-19 infection or previous risk exposure<sup>14</sup> Whereas "fever is a key warning sign of COVID-19 Therefore".<sup>17</sup>

The results showed that dentists reduced working days and hours including reduced staff and medical assistants and received a limited number of patients. This is an explanation about, Urgent or emergency oral health care interventions that are vital for preserving a person's oral functioning, managing severe pain or securing quality of life should be provided.<sup>14</sup>

The results showed that 94.86% of Saudi dentists directed patients, paramedics, and staff to wash hands with soap and water or hand sanitizer that contains alcohol, and wearing masks is necessary for everyone, at a rate of 98.86%. This indicates the awareness of dentists about: Importance of wearing a mask by everyone in prevention of transmission was seen during the influenza epidemic.<sup>14 18</sup> "Wearing a mask helps in preventing the aerosol spread of COVID-19".<sup>19</sup>

the most important personal protective equipment followed by dentists, follow wearing a muzzle at 99.81%, followed by wearing gloves at 99.62%. Face masks is an important weapon in the prevention of cross infection in the healthcare setting.<sup>20 21</sup>. The purpose of a face shield, that usually consists of a clear plastic material, is to protect the mucous membrane of the face (eyes, nose and mouth) from direct splashing<sup>22</sup>,

With regard to the most prominent sterilization and waste disposal procedures, 98.48% responded that they followed the sterilization of all medical devices before and after providing care to patients, while 94.66% indicated that medical waste should be disposed of.

The correct management of the sterilization and presterilisation phases plays a fundamental role in good management of instruments and personnel, in order to ensure conditions that are more efficient with less down time. instrument sterilizers are increasingly efficient in achieving results<sup>23</sup>.

While the results showed a decline in some preventive measures followed by Saudi dentists such as: wearing protective outerwear, using rubber dams, use a mouthwash that contains chlorhexidine, and wearing shoe covers.

From the results of the study, it can be said that Saudi dentists were very good at following preventive measures against the Corona virus, according to the considerations and recommendations of the World Health Organization related to the Corona virus.



## CONCLUSION

The results have demonstrated a very good commitment of Saudi dentists to following the preventive measures to the containment of the virus spread recommended by the World Health Organization for oral care professionals, and given the low participation rate in this study, more comprehensive studies should be conducted regarding the level of the preventive measures commitment of oral health care providers, Due to the danger of the Coronavirus to the field of dentistry and oral care, Especially that, the main factor for transmission of the coronavirus is exposure to infected droplets and secretions of aerosols particularly, from those without symptoms.

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## Appendices (questionnaire form)

10/24/2020 EVALUATION OF PREVENTIVE PROCEDURES FOLLOWED BY SAUDI DENTISTS AGAINST COVID-19

### EVALUATION OF PREVENTIVE PROCEDURES FOLLOWED BY SAUDI DENTISTS AGAINST COVID-19

The aim of designing this questionnaire is to conduct a scientific study to be published for the purpose of admission to postgraduate programs, and we seek through this study to evaluate the procedures followed by workers in the field of oral and dental health - at hospitals and health facilities that provide health care to patients in the field of dentistry - during Coronavirus (COVID-19) pandemic.  
This questionnaire is designed to evaluate the preventive measures followed by Saudi dental practitioners in accordance with the preventive instructions and guidelines issued by the World Health Organization.  
We ask all dentists and dental practitioners working in hospitals and clinics participating in this questionnaire, noting that your answers will be used for research and scientific purposes only, with the aim of providing appropriate treatments, solutions and proposals to serve the field of dentistry, as well as enriching Saudi scientific production with more recent research and studies.

\*مطلوب

1. SEX \*

حدد دائرة واحدة فقط.

Male

Female

2. AGE \*

حدد دائرة واحدة فقط.

20-30

31-40

41-50

51+

3. City \*

حدد دائرة واحدة فقط.

Riyadh

Jeddah

Madinah

Makkah

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4. Work Setting \*

حدد دائرة واحدة فقط.

Private

Government

5. Specialty \*

حدد دائرة واحدة فقط.

General Dentistry

Prosthodontics

Orthodontics

Oral Maxillofacial Surgery

Pediatric Dentistry

Endodontics

Periodontics

Other

6. The important Sources of information for prevention measures \*

حدد كل الإجابات المتعلقة.

WHO guidelines

Scientific sources (articles, studies, researches, reports...)

Media (TV & Radio programs, Social media posts)

7. Procedures of Screening/checking Patients for COVID-19 Symptoms \*

حدد كل الإجابات المتعلقة.

Screening patients by virtual/remote technology or telephone

Checking the patient's temperature by digital thermometer.

Asking all patients upon attending if they have a symptoms consistent with COVID-19

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8. Considerations for the provision of essential oral health \*

حدد كل الإجابات الملائمة

- Reducing working days
- Reducing working hours
- Reducing the number of staff and medical assistants (shift system)
- Receive a limited number of patients (for critical cases)

9. Important advice and instructions for assistants, staff and patients \*

حدد كل الإجابات الملائمة

- Handwashing with soap and water or alcohol-based hand sanitizer for everyone
- Wearing masks is essential for everyone
- Opening windows and doors for ventilation
- Placing posters and prevention flyers
- Social distancing is important for everyone

10. Personal Protective Equipment \*

حدد كل الإجابات الملائمة

- Wearing gloves
- Wearing masks
- Wearing medical uniform
- Wearing surgical gowns
- Wearing medical goggles
- Wearing face shields
- Wearing Head covers
- Wearing protective outerwear
- Wearing the shoe covers

11. Sterilization and Waste disposal procedures \*

حدد كل الإجابات الملائمة

- Sterilizing all medical devices before and after providing patient care
- Continuous sterilization for entrances, floors, and walls
- Continuous sterilization of the desks, chairs and surfaces
- Waste disposal

12. Protective procedures followed to in waiting room \*

حدد كل الإجابات الملائمة

- Receive patients according to a chronic schedule
- Limiting the reception of companions of patients except when necessary
- Private waiting rooms for the elderly and diabetics

13. Protective procedures during providing oral health care \*

حدد دائرة واحدة فقط

- Using a Rubber dam
- Using High-Volume Suction
- Use a mouthwash that contains chlorhexidine

14. Why should preventive measures be applied in dentistry specifically? \*

حدد دائرة واحدة فقط

- Dentistry is one of the most exposed professions to respiratory diseases eg covid-19
- The dentist's association with patients from all segments of society
- To ensure safer care for diabetes dental patients and elderly

15. Self-evaluation for applying of preventive procedure \*

حدد دائرة واحدة فقط

- 0-20 %
- 21-40 %
- 41-60 %
- 61-80 %
- 81-100 %