

ความรู้ ทักษะ ทักษะ พฤติกรรม และความคาดหวังของคนไข้ไทยต่อการรักษาทางทันตกรรมในช่วงที่มีการระบาดของโรคโควิด 19: สํารวจทางออนไลน์



วิทยานิพนธ์นี้เป็นส่วนหนึ่งของการศึกษาตามหลักสูตรปริญญาวิทยาศาสตรมหาบัณฑิต  
สาขาวิชาศัลยศาสตร์ช่องปากและแม็กซิลโลเฟเชียล ภาควิชาศัลยศาสตร์  
คณะทันตแพทยศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย  
ปีการศึกษา 2565  
ลิขสิทธิ์ของจุฬาลงกรณ์มหาวิทยาลัย

KNOWLEDGE, ATTITUDES, BEHAVIOR, AND EXPECTATION OF THAI PATIENTS TOWARD  
DENTAL TREATMENT DURING COVID-19 PANDEMIC: AN ONLINE SURVEY



A Thesis Submitted in Partial Fulfillment of the Requirements  
for the Degree of Master of Science in Oral and Maxillofacial Surgery

Department of Oral and Maxillofacial Surgery

FACULTY OF DENTISTRY

Chulalongkorn University

Academic Year 2022

Copyright of Chulalongkorn University

หัวข้อวิทยานิพนธ์	ความรู้ ทักษะ พฤติกรรม และความคาดหวังของคนใช้ไทย ต่อการรักษาทางทันตกรรมในช่วงที่มีการระบาดของโรคโควิด 19: สํารวจทางออนไลน์
โดย	น.ส.ปรีชาญ์ ปิงสุทธิวงศ์
สาขาวิชา	ศัลยศาสตร์ช่องปากและแม็กซิลโลเฟเชียล
อาจารย์ที่ปรึกษาวิทยานิพนธ์หลัก	รองศาสตราจารย์ ทันตแพทย์หญิง ดร.เกศกัญญา สัพพะ เลข
อาจารย์ที่ปรึกษาวิทยานิพนธ์ร่วม	อาจารย์ ทันตแพทย์ ดร.ภาสวัชร วีรียกิจจา

---

คณะทันตแพทยศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย อนุมัติให้บัณฑิตวิทยาลัย  
ของการศึกษาตามหลักสูตรปริญญาวิทยาศาสตรมหาบัณฑิต

..... คณบดีคณะทันตแพทยศาสตร์  
(ศาสตราจารย์ ทันตแพทย์ ดร.พรชัย จันศิษย์ยานนท์)

คณะกรรมการสอบวิทยานิพนธ์

..... ประธานกรรมการ  
(รองศาสตราจารย์ ทันตแพทย์ ดร.อาทิพันธุ์ พิมพ์ขาวขำ)

..... อาจารย์ที่ปรึกษาวิทยานิพนธ์หลัก  
(รองศาสตราจารย์ ทันตแพทย์หญิง ดร.เกศกัญญา สัพพะเลข)

..... อาจารย์ที่ปรึกษาวิทยานิพนธ์ร่วม  
(อาจารย์ ทันตแพทย์ ดร.ภาสวัชร วีรียกิจจา)

..... กรรมการภายนอกมหาวิทยาลัย  
(ผู้ช่วยศาสตราจารย์ ทันตแพทย์หญิง ดร.มานิสรา ศรีชลเพ็ชร)

ปรัชญา ปิงสุทริวงศ์ : ความรู้ ทักษะคติ พฤติกรรม และความคาดหวังของคนไข้ไทยต่อการรักษาทางทันตกรรมในช่วงที่มีการระบาดของโรคโควิด 19: สํารวจทางออนไลน์. (KNOWLEDGE, ATTITUDES, BEHAVIOR, AND EXPECTATION OF THAI PATIENTS TOWARD DENTAL TREATMENT DURING COVID-19 PANDEMIC: AN ONLINE SURVEY) อ.ที่ปรึกษาหลัก : รศ. ทพญ. ดร.เกศกัญญา สัพพะเลข, อ.ที่ปรึกษาร่วม : อ.ทพ. ดร.ภาสวัชร วิริยกิจจา

จากสถานการณ์การระบาดของโรคโควิด 19 มาตรการทางทันตกรรมที่ก่อให้เกิดละอองฝอยที่มีการปนเปื้อนของน้ำลาย อาจเป็นช่องทางหนึ่งในการแพร่กระจายเชื้อไวรัสชนิดนี้ โดยมาตรการป้องกันการแพร่กระจายเชื้อในคลินิกทันตกรรมได้มีการเปลี่ยนแปลงเป็นระยะ เพื่อให้สอดคล้องกับสถานการณ์การระบาดที่เปลี่ยนแปลงไป งานวิจัยนี้จึงต้องการสำรวจถึงผลกระทบของการระบาดของโรคโควิด 19 ต่อคนไข้ไทยในการเข้ารับการรักษาทางทันตกรรม แบบสอบถามออนไลน์ถูกเผยแพร่ในช่วงเดือนมิถุนายน 2565 มีผู้ตอบแบบสอบถามจำนวน 978 คนที่ผ่านเกณฑ์การคัดเลือกผู้เข้าร่วมการวิจัย ผลการสำรวจพบว่า ผู้ตอบแบบสอบถามส่วนใหญ่มีความรู้ที่ถูกต้องเกี่ยวกับการแพร่กระจายเชื้อโคโรนาไวรัสในคลินิกทันตกรรม มีระดับความกังวลเฉลี่ยและค่ามัธยฐานเกี่ยวกับการติดโควิด 19 จากการใช้ชีวิตประจำวัน เท่ากับ 3.06 และ 3 การติดโควิด 19 จากการเข้าไปรับบริการทางทันตกรรม เท่ากับ 3.23 และ 3 ปัญหาสุขภาพช่องปาก ถ้าไม่ได้รับการรักษาเนื่องจากการแพร่ระบาดของโรคโควิด 19 เท่ากับ 3.4 และ 3 ร้อยละ 61.1 ของผู้ตอบแบบสอบถามไม่ได้รับการรักษาทางทันตกรรมในช่วงที่มีการแพร่ระบาดของโรคโควิด 19 โดยมีสาเหตุ เช่น ไม่มีอาการ กลัวโรคโควิด 19 และ คลินิกทันตกรรมปิดให้บริการเป็นต้น จากผลการสำรวจสรุปได้ว่า คนไข้ไทยมีความกังวลระดับปานกลางว่าจะติดโควิดจากการเข้ารับการรักษาทางทันตกรรมมากกว่าจากการใช้ชีวิตประจำวันอย่างมีนัยสำคัญทางสถิติ รวมไปถึงมีจำนวนของผู้ที่ไม่ได้เข้ารับการรักษาทางทันตกรรมในช่วงที่มีการระบาดของโรคโควิด 19 มากขึ้น ดังนั้นหน่วยงานต่างๆที่เกี่ยวข้องควรให้ความสำคัญเกี่ยวกับการให้ทันตสุขศึกษา การปรับปรุงและพัฒนามาตรการป้องกันการแพร่กระจายเชื้อในคลินิกทันตกรรม เพื่อให้คนไข้มีความมั่นใจในการกลับเข้ามาใช้บริการได้อย่างปลอดภัย

สาขาวิชา ศัลยศาสตร์ช่องปากและแม้มัก ลายมือชื่อนิสิต .....  
ซิลโลเฟเซียล

ปีการศึกษา 2565 ลายมือชื่อ อ.ที่ปรึกษาหลัก .....  
ลายมือชื่อ อ.ที่ปรึกษาร่วม .....

# # 6370016032 : MAJOR ORAL AND MAXILLOFACIAL SURGERY

KEYWORD: COVID-19 Dentistry Thai patient Knowledge Attitudes Behavior

Paratcha Pingsuthiwong : KNOWLEDGE, ATTITUDES, BEHAVIOR, AND EXPECTATION OF THAI PATIENTS TOWARD DENTAL TREATMENT DURING COVID-19 PANDEMIC: AN ONLINE SURVEY. Advisor: Assoc. Prof. KESKANYA SUBBALEKHA, D.D.S., Ph.D. Co-advisor: PASWACH WIRIYAKIJJA, D.D.S., M.Sc., Ph.D.

Aerosol-generating procedures with contaminated saliva may pose a risk of disease transmission during the COVID-19 pandemic. COVID-19 preventive measures in dental clinics have evolved in response to the pandemic situation. This research investigated the effect of this pandemic on Thai patients' knowledge, attitudes, and behavior toward dental treatment. The online survey was distributed in June 2022. There were 978 participants in the study. The results showed that most participants had accurate knowledge about the COVID-19 transmission route in dentistry. The mean and median level of concern in the following issues were: contracting COVID-19 in daily life (3.06 and 3.03), contracting COVID-19 from a dental clinic (3.23 and 3.03), and oral health problems while dental clinics were disrupted due to the COVID-19 pandemic (3.4 and 3.03). Because they had no symptoms, were afraid of COVID-19, and dental clinics were closed, 61.1 percent of participants did not receive any dental treatment during the pandemic. Therefore, dental organizations should encourage patients to return for dental visits, promote oral health care behaviors, and strictly follow the COVID-19 preventive measures in dental clinics.

Field of Study: Oral and Maxillofacial  
Surgery

Student's Signature .....

Academic Year: 2022

Advisor's Signature .....

Co-advisor's Signature .....

## กิตติกรรมประกาศ

งานวิจัยเรื่อง ความรู้ ทักษะ ทักษะ พฤติกรรม และความคาดหวังของคนไข้ไทยต่อการรักษาทางทันตกรรมในช่วงที่มีการระบาดของโรคโควิด 19: สํารวจทางออนไลน์ สามารถดำเนินการจนสำเร็จลุล่วงไปด้วยดี เนื่องจากได้รับความอนุเคราะห์และสนับสนุนเป็นอย่างดีจาก รศ.ทพญ.ดร.เกศกัญญา สัพพะเลข และอ.ทพ.ดร.ภาสวัชร วิริยกิจจา อาจารย์ที่ปรึกษาวิทยานิพนธ์หลัก และอาจารย์ที่ปรึกษาวิทยานิพนธ์ร่วม ที่ได้กรุณาให้คำปรึกษา ความรู้ คำแนะนำ เพื่อนำไปปรับปรุงแก้ไขข้อบกพร่องต่าง ๆ จนกระทั่งการวิจัยครั้งนี้สำเร็จเรียบร้อยด้วยดี รวมไปถึง รศ.ทพญ.ดร.นිරชา สารชวณะกิจ และ รศ.ทพญ.ดร.ผกาภรณ์ พันธูดี พิศาลธุรกิจ ที่ได้กรุณาให้คำแนะนำ ช่วยตรวจสอบความตรงเชิงเนื้อหา รวมไปถึงให้คำปรึกษาเกี่ยวกับการใช้สถิติเพื่อการวิจัย และผู้เข้าร่วมตอบแบบสอบถามงานวิจัยทุกท่านที่เสียสละเวลาเพื่อตอบแบบสอบถามในครั้งนี้ ผู้วิจัยขอกราบขอบพระคุณเป็นอย่างสูงไว้ ณ ที่นี้

ปรีชาญ์ ปิงสุทธีวงศ์



จุฬาลงกรณ์มหาวิทยาลัย  
CHULALONGKORN UNIVERSITY

## สารบัญ

	หน้า
บทคัดย่อภาษาไทย.....ค	ค
บทคัดย่อภาษาอังกฤษ..... ง	ง
กิตติกรรมประกาศ..... จ	จ
สารบัญ..... ฉ	ฉ
Chapter I..... 1	1
Introduction..... 1	1
1.1 Background and Rationale..... 1	1
1.2 Research Questions..... 3	3
1.3 Research Objectives..... 3	3
1.4 Research design..... 3	3
1.5 Benefits of this study..... 3	3
1.6 Operational definition..... 4	4
1.7 Limitation..... 4	4
Chapter II..... 6	6
Literature review..... 6	6
2.1 COVID-19..... 6	6
2.2 COVID-19 in Thailand (situation): WHO report..... 11	11
2.3 COVID-19 and dentistry..... 13	13
2.3.1 Virus in saliva and salivary gland..... 13	13
2.3.2 Transmission route in dentistry..... 13	13
2.3.3 Dental guideline during COVID-19 pandemic..... 15	15

2.4 Conceptual framework .....	25
Chapter III.....	26
Materials and methods.....	26
3.1 Study population and sample size.....	26
3.1.1 Study population.....	26
3.1.2 Sample size .....	26
3.1.3 Sample selection.....	26
3.2 Data collection.....	27
3.3 Questionnaire development .....	27
3.3.1 Item selection.....	27
3.3.2 Reliability, validity, and consistency of the questionnaire.....	29
3.4 Research protocol.....	29
3.5 Statistical analysis.....	29
3.6 Ethic approval.....	30
3.7 Research schedule.....	31
3.8 Budget.....	31
Chapter IV .....	32
Results .....	32
4.1 Demographic data.....	32
4.2 Attitudes toward the COVID-19 pandemic.....	34
4.3 COVID-19-related dental treatments.....	36
4.4 Statistic analysis.....	45
Chapter V .....	56
Discussion.....	56



Chapter VI .....	61
Conclusion .....	61
Appendix .....	62
Appendix 1.....	62
Appendix 2.....	68
บรรณานุกรม .....	78
ประวัติผู้เขียน.....	84



# Chapter I

## Introduction

### 1.1 Background and Rationale

Corona Virus Disease (COVID-19) is the respiratory infectious disease caused by Severe Acute Respiratory Syndrome - Coronavirus 2 (SARS-CoV-2). The first COVID-19 outbreak began in Wuhan, China, in December 2019 and then it has rapidly spread throughout the world.(1) The transmission route of SARS-CoV-2 are mainly direct contact and droplet transmission. Aerosol transmission is also possible in place that exposure to high concentrations of aerosols such as closed environment.(2)

Millions of infected persons and several hundred thousand of deaths was reported in a few months.(3) However, prevention of infection can be done by physical distancing, proper hand hygiene, always wearing mask, avoid crowded places and vaccination.(4) The multiple episodes of disease outbreak have negative impacts not only healthcare system, global economy, and social stability, but also people's lifestyle, physical and mental well-being.(5, 6)

Dental treatment procedures can generate airborne droplets and aerosols which contain patients' saliva, blood, microorganisms, and other debris.(7) Many reports suggest that SARS-CoV-2 found in the saliva of infected patients and salivary gland is a source of virus(8-12), and there was an evidence that the virus can be found in aerosol particles up to 3 hours in an experimental condition(13) and SARS-CoV-2 RNA could be found in the indoor air of dental clinics.(14) Since some infected persons have very mild symptoms or no symptom and the incubation period can last up to 14 days, it is not always possible to identify asymptomatic patients.(15, 16) Thus, it has a chance that SARS-CoV-2 may spread during dental treatment by asymptomatic SARS-CoV-2 infected dental patients, although there has been no report of COVID-19 transmission case in a dental setting recently.(7)

During the disease outbreak, elective medical health care especially aerosol-generating procedures including dental operations are postponed for reducing the chance of disease transmission. Many dental guidelines are launched for dental healthcare providers to follow such as patients screening, emergent-urgent case selection, preoperative mouthwash, Personal Protective Equipment (PPE) application or room ventilation.(17-19) These guidelines may be continued for dental care after pandemic, as a new normal dental treatment.

The COVID-19 pandemic affects not only dental health care providers, but also on patients.(20) There are several studies that investigate dental patients during COVID-19 pandemic. Some patients feel worried about progression of their dental or oral diseases due to unavailable dental appointment.(21) Moreover, patient's anxiety of contracting COVID-19 during dental treatment was reported and it was associated with the decision to get dental treatment.(21-24) During the COVID-19 pandemic, the majority of dental treatments were orthodontic and emergency.(21, 25) Most of the patients had confidence in the dental sector to provide safety measures to prevent COVID-19 transmission.(22-24) Although, most of dental patients had high level of knowledge in preventive COVID-19 transmission but the knowledge about infection control in dental clinic are still controversy.(26, 27)

The new variant of SARS-CoV-2, Omicron, has been identified after 2 years of COVID-19 emerge. Although it is more contagious than other SARS-CoV-2 variants, the main clinical symptoms are mild. However, the mortality rate of this variant has not yet been reported.(28) Additionally, it appears to demonstrate a significant vaccine escape with existing vaccines. Omicron might help put an end to the pandemic if it turns out to cause a less serious illness.(29) Meanwhile, most dental clinics are providing full dental services with COVID-19 preventive measures during this period. The patients' attitudes and behaviors will change because of the reasons above. Furthermore, the study that investigated the effect of COVID-19 from the earlier variants to the Omicron period on Thai patients in dentistry was not found.

Moreover, because of differences in socioeconomic status, cultural context, and national personality, as well as differences in disease infections and deaths in each country and period of study, Thai patients' knowledge, attitudes, and behavior toward dental treatment during the COVID-19 outbreak, as well as the patients' expectations for dental treatment after this pandemic, should be investigated.

### 1.2 Research Questions

- How much do Thai patients understand about the COVID-19 transmission route and prevention in dentistry?
- How does the COVID-19 pandemic impact **attitude** and **behavior** of Thai patients toward dental treatment?
- What is the **expectation** of patients from their dental healthcare providers during or after COVID-19 pandemic?

### 1.3 Research Objectives

- To understand the patient's knowledge, attitudes, and behavior about dental treatment during COVID-19 pandemic
- To investigate the patient's expectation from their dental healthcare providers during or after Covid-19 pandemic

### 1.4 Research design

- Cross-sectional questionnaire survey

### 1.5 Benefits of this study

- Apply the results of this study to improve patient's knowledge and accurate understanding of infection control in dentistry during and after COVID-19 pandemic, through any private project or public policy.
- To increase the patient's confidence in dental treatment during and after the COVID-19 pandemic by refining dental services following scientific data and patient opinion.

- The questionnaire may be useful as survey or questionnaire prototype for other pandemic in the future.

#### 1.6 Operational definition

- **COVID-19:** referred from Coronavirus disease is an infectious disease caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). The virus can cause mild to moderate respiratory illness and recover without requiring special treatment in most infected patients whereas, older people or those with underlying medical problems are more likely to develop serious illness.
- **Thai patients** are Thai person who receiving or registered to receive medical treatment in Thailand.
- **Dental healthcare provider** is people who is authorized to practice by the state and performing within the scope of dentistry such as dentist, dental hygienist.
- **Dental treatment** is a treatment related to teeth or structures supporting teeth performed by dental healthcare provider.
- **Knowledge** is a set of understandings, awareness of someone or something.
- **Attitude** is one's thought or feel about something or situation.
- **Behavior** is the way in which one acts or conducts oneself, especially toward others.
- **Expectation** is the feeling or belief that something will or should happen.

#### 1.7 Limitation

- This study was limited to people who had internet access or smartphones because the data was collected using a Google Form (an online survey).
- Because this is a cross-sectional study, it can only provide information on Thai dental patients' knowledge, attitudes, behavior, and expectations during the COVID-19 pandemic.

The questionnaire used in this study was developed and used in Thailand. Thus, the result of this study might not be comparable to studies conducted in other countries.



## Chapter II

### Literature review

#### 2.1 COVID-19

At the end of 2019, severe respiratory illness outbreak occurred in Wuhan City, China.(1) On January 10, 2020, the Chinese Center for Disease Control and Prevention (China CDC) released the first genome sequence of virus as 2019 novel Coronavirus (2019-nCoV) that cause this situation and the name was changed to SARS-CoV-2 by the World Health Organization (WHO) on February 11.(30) After that, it rapidly spread across China and many other countries. Then, the WHO declared the global COVID-19 outbreak as pandemic on March 11, 2020.(1, 30) A sequence of COVID-19 events is shown in figure 1.

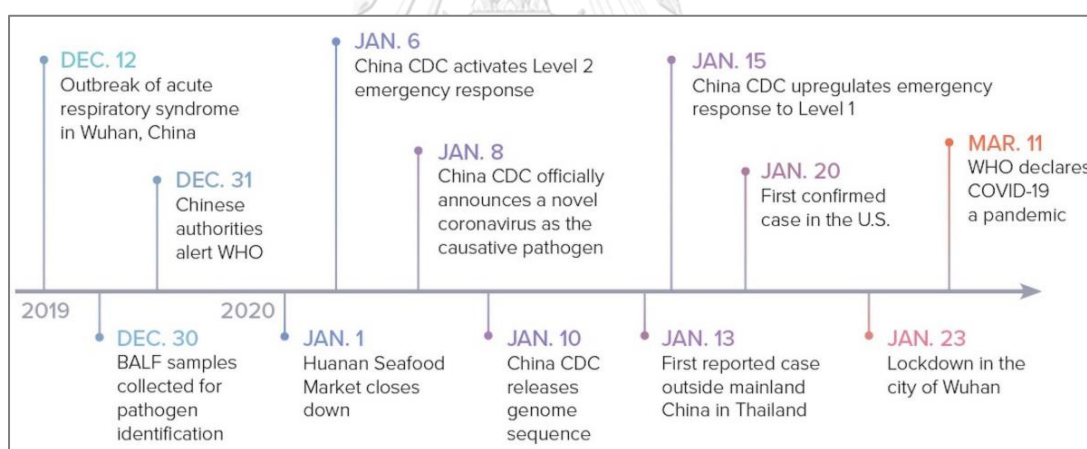


Figure 1. COVID-19: timeline to pandemic (30)

SARS-CoV-2 is a member of the family *Coronaviridae*, subfamily *Coronavirinae*, genus *Betacoronavirus* which also includes MERS-CoV and SARS-CoV., and subgenus *Sarbecovirus* as Figure 2.(31) From genus group, Alpha- and beta-coronaviruses are known to cause more severe and deadly infections in humans, whereas gamma- and delta-viruses are expected to cause asymptomatic or mild sickness in humans and are primarily seen in birds and pigs.(30)

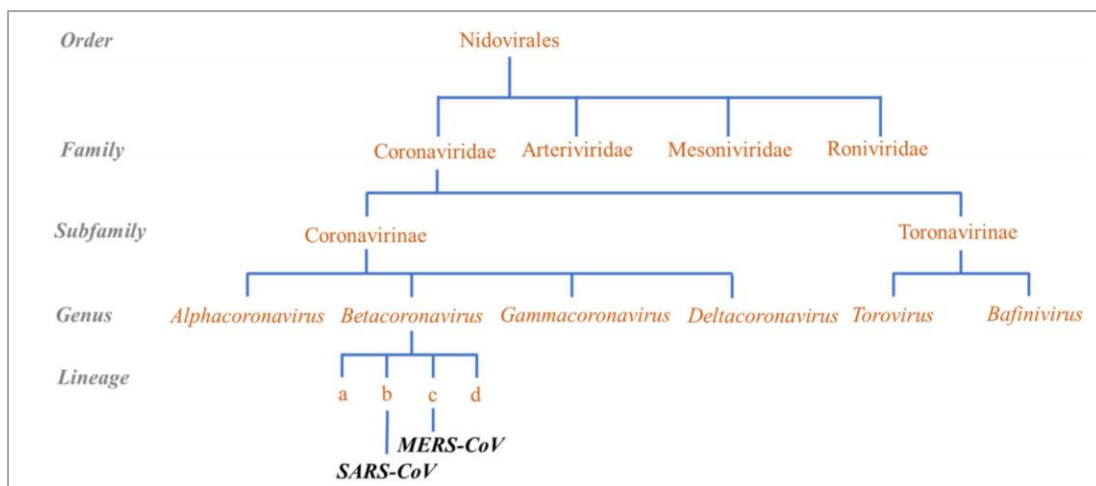


Figure 2. Classification scheme of coronaviruses

### SARS-CoV-2 structure

SARS-CoV-2 is a single-stranded positive-sense RNA virus with no segments. It is a spherical or pleomorphic enveloped virus in structure. SARS-CoV-2 has a genome size of 29 Kb RNA, which is in the middle of the SARS-CoV (28 Kb) and MERS-CoV (30 Kb) genome sizes. There are four major structural proteins shown in Figure 3: spike (S) protein, membrane (M) protein, envelope (E) protein, and nucleocapsid (N) protein. The spikes play the most important role in COVID-19 pathogenesis. The membrane which spans the membrane bilayer and keeps the virion's form, is the most abundant protein and plays a significant role during the budding of viral particles from host cells. The envelope protein also have an important role in viral pathogenesis, and is conserved protein of SAR-CoV-2. Last, the nucleocapsid, which is formed by the N protein and genomic RNA, maintains the genome structure inside the envelope and is involved in viral assembly, budding, and the host cellular response to viral infection.(3)



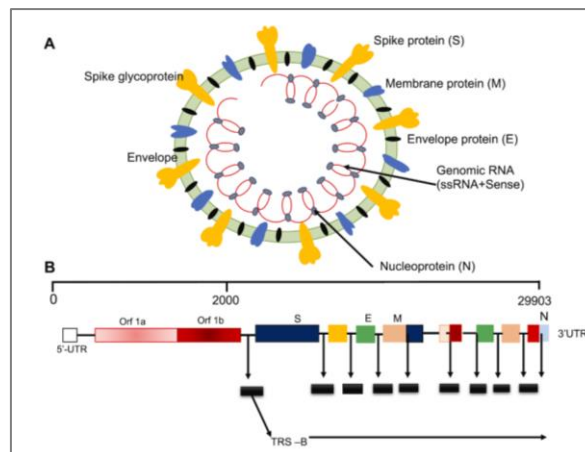


Figure 3. SARS-CoV-2 (A) virus structure and (B) genome organization

### Pathogenesis of COVID-19

COVID-19 pathogenesis is explained in Figure 4 following; SARS-CoV-2 enter to cell by binding to ACE2 receptor which locate on the epithelial cell via endocytosis or by membrane fusion and releasing its RNA into the cytoplasm. Viral RNA uses the cell's structure to translate and replicate its viral nonstructural and structural proteins. Viral structural proteins S, E, and M assemble in the rough endoplasmic reticulum (RER). Afterward, other viral structures and nucleocapsid (N) assemble in the endoplasmic reticulum golgi intermediate (ERGIC). After new virion packed in golgi vesicles, they will fuse with the plasma membrane and get released via exocytosis. Infection with SARS-CoV-2 causes inflammatory factors to be released, causing macrophages and dendritic cells to become activated. Moreover, SARS-CoV-2 antigen presentation via major histocompatibility complexes I and II (MHC I and II) activates humoral and cellular response, leading to the generation of cytokines and antibodies. In severe cases of COVID-19, the virus enters the lower respiratory tract and infects type II pneumocytes, causing apoptosis and surfactant depletion. A cytokine storm is triggered by the influx of macrophages and neutrophils. Alveolar edema is caused by leaky capillaries. The formation of a hyaline membrane occurs. All of these pathological alterations hinder gas exchange by causing alveolar injury and collapse.(30)

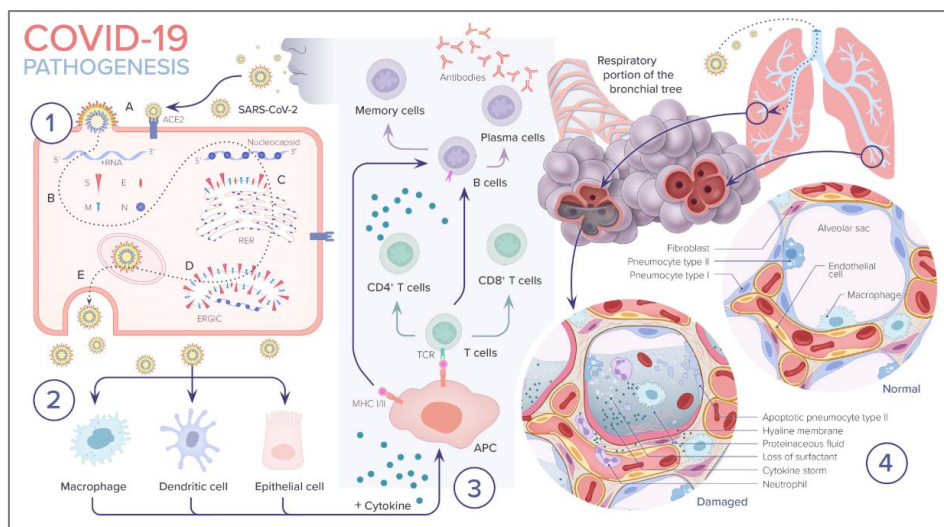


Figure 4. COVID-19 pathogenesis

#### Clinical characteristics of COVID-19

COVID-19 clinical characteristics can be classified as follows: asymptomatic, mild, moderate, severe, and critical, as detailed in Figure 5.(15)

From systematic review and meta-analysis of 1155 patients with COVID-19 showed the incidence of fever was 80% (95% CI 74-87%), that was the most prevalent clinical manifestation, but fever alone does not distinguish this infection from other infections. Then, the results followed by cough (53%, 95% CI 33-72%), and minor symptoms were myalgia (21%, 95% CI 15-26%) and diarrhea (7%, 95% CI 4-10%).(32)

According to multicenter study in Europe, among 417 patients COVID-19 with mild to moderate symptoms had 85.6% olfactory dysfunctions and 88.8% gustatory dysfunctions. Phantosmia and parosmia were 12.6% and 32.4%, respectively. Among the patients who did not complain of nasal congestion and rhinorrhea, there were 66.2% anosmia and 13.5% hyposmia.(33) Moreover, 11.8% of COVID-19 patients with olfactory dysfunction onset before other general symptoms, 22.8% at the same time and 65.4% after the general symptoms. On the contrary, the study from China showed only 5.1% of 214 patients complained of hyposmia and 5.6% hypogeusia.(34)

In a report of 72,314 cases in China, most patients represented signs of COVID-19 infection after an incubation period between 1–14 days but most commonly around 5 days, and dyspnea and pneumonia developed within a median time of 8 days from

illness onset. From total cases, they were classified as mild 81%, severe cases 14% that required ventilation in an intensive care unit (ICU) and critical 5% that had respiratory failure, septic shock and/or multiple organ dysfunction or failure.(35) Most common radiographic finding on inpatient's chest computed tomography (CT) was ground glass opaque appearance. Most patients also developed notable lymphopenia, similar to patients with SARS and MERS, and non- survivors developed severer lymphopenia over time. Compared with non-ICU patients, ICU patients had higher levels of plasma cytokines, caused by a cytokine storm.(36, 37) Around 2.3 percent of the patients in this cohort died within 16 days after disease onset. Regardless of a history of cardiovascular illness, men over the age of 68 had a greater risk of respiratory failure, acute cardiac damage, and heart failure that resulted in death as figure 6.(37) Most patients recovered enough to be released from hospital in 2 weeks.(35, 38)

Type	Clinical characteristics	RT-PCR test for COVID-19
Asymptomatic	No clinical symptoms and chest imaging findings.	Positive
Mild	Mild clinical symptoms, such as fever, fatigue, cough, anorexia, malaise, muscle pain, sore throat, dyspnea, nasal congestion, headache. No abnormal chest imaging findings.	Positive
Moderate	Mild or moderate clinical features. Chest imaging showed mild pneumonia manifestation.	Positive
Severe	Suspected respiratory infection symptoms, plus any of the following: Shortness of breath, RR $\geq$ 30 breaths/min; At rest, oxygen saturation $\leq$ 93%; PaO <sub>2</sub> /FiO <sub>2</sub> $\leq$ 300 mmHg (1 mmHg = 0.133 kPa). Chest imaging showed the lesions significantly progressed > 50% within 24–48 h was a severe disease.	Positive
Critical	Rapid progress of disease, plus any of the following: Respiratory failure, and need mechanical ventilation; Shock; Combined with other organ failure requires ICU monitoring treatment.	Positive

RT-PCR, reverse transcriptase-polymerase chain reaction; RR, respiratory rate; PaO<sub>2</sub>, arterial partial pressure of oxygen; FiO<sub>2</sub>, oxygen concentration; ICU, intensive care unit.

Figure 5 Clinical characteristics of COVID-19

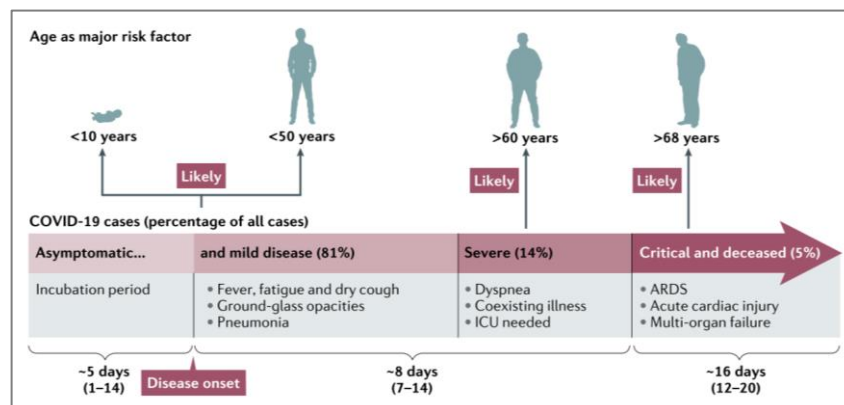


Figure 6 Clinical features of COVID-19 related to age

## 2.2 COVID-19 in Thailand (situation): WHO report.

Website: [www.who.int/thailand/emergencies/novel-coronavirus-2019/situation-reports](http://www.who.int/thailand/emergencies/novel-coronavirus-2019/situation-reports)

On 13<sup>th</sup> January 2020, the Ministry of Public Health announced the first confirmed case in Thailand. Then, COVID-19 was designated as a dangerous communicable disease, published in the Thai Royal Gazette and effected on 1<sup>st</sup> March 2020.

During March, Thailand reported amounts of rising new cases since the virus reached the country. There were several causes of these spreading including Muay Thai and pub cluster, religious event cluster or people leaving Bangkok to their hometown. All Bangkok markets and malls were ordered to close from 22<sup>nd</sup> March until 12<sup>th</sup> April. On 26<sup>th</sup> March 2020 Thailand Prime Minister declared a National Emergency Decree effective until April 30<sup>th</sup>. After that, the government had announced a nationwide curfew from 3<sup>rd</sup> April 2020 to 14<sup>th</sup> June 2020.

The second period of COVID-19 spreading occurred in mid-December 2020. This significant increase in confirmed cases was related to the outbreak in Samut Sakhon, which is the center of the country's fishing industry. This situation was impacted by migrant Myanmar workers. Besides, there was a gambling den cluster in Rayong.

The third period of COVID-19 spreading occurred in April to June, 2021. The situation of increasing in confirmed cases were linked to entertainment venues in the Thonglor or Ekamai area (The Thonglor/Ekamai cluster). Moreover, most cases in this period were infected with Alpha B.1.1.7 variant of the SARS-CoV-2 virus, which was known to be highly transmissible and most of the cases occurred in the working age group and followed by Delta (B.1.617.2) and Beta (B.1.351), respectively. After that, the number of infected patients were found from several clusters such as prison facilities. Because Thailand's COVID-19 measures state that if any hospital detects positive cases, they are responsible for patient admission, many private hospitals limit their testing capacity due to a lack of available room and medical equipment for positive patient admission. According to this situation, the Ministry of Public Health and Bangkok Metropolitan Administration are setting up field hospitals and hospitel or hotels

adapted to provide basic care and observation for recuperating patients after hospital discharge, to facilitate this case load and not just the number of infected patients.

Recently, the fourth period of COVID-19 spreading occurred in July 2021 which Delta was the dominant variant of Covid-19 in Thailand. The number of infected people were highest and exceeds two thousand in August. Moreover, hundreds of people died each day. COVID-19 Rapid Antigen Testing was used for people to self-test.

The first imported case of the Omicron version was discovered, and local transmission of the Omicron variant was confirmed in December 2021, according to the Thai Ministry of Public Health (MOPH). The government was quite concerned about this situation because it raised the possibility that the Thai healthcare system could collapse, just like it did during the Delta pandemic.

For vaccine distribution and vaccination in Thailand, there were Sinovac, Sinopharm, AstraZeneca, Pfizer, and Moderna available.

The number of cases and deaths from COVID-19 in Thailand for each time period are shown in Figures 8 and 9.

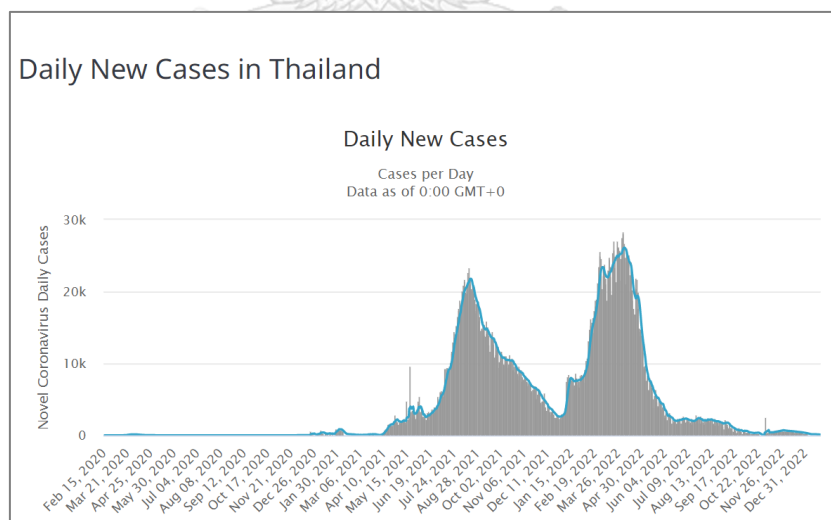


Figure 7. Daily New Cases in Thailand (Updated 24/1/23)

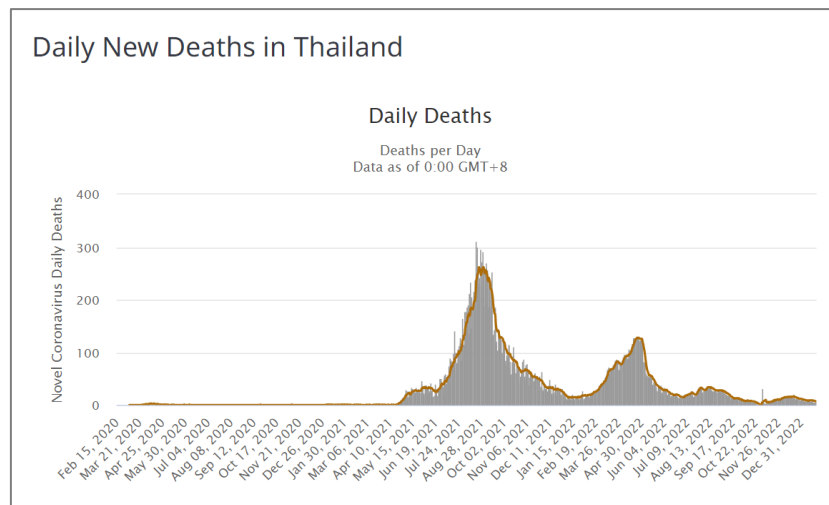


Figure 8. Daily New Deaths in Thailand (Updated 24/1/23)

## 2.3 COVID-19 and dentistry

### 2.3.1 Virus in saliva and salivary gland

There is a study reported that live viruses were present in the saliva of infected patients by viral culture method.(8-12) It has been shown that viral load in saliva peaks at onset of symptoms and is highest during the first week. Then, it subsequently reduces over time. Viruses were found in the saliva samples taken within 2 weeks after symptom onset.(38)

Furthermore, ACE2 is an important receptor for SARS-CoV-2, which is abundantly found along the respiratory tract, including the salivary gland duct epithelium in the human mouth, and is one of the early targets of SARS-CoV-2 infection. The viruses can effectively use ACE2 as a receptor to invade cells and promote transmission among humans.(9)

### 2.3.2 Transmission route in dentistry

Respiratory infections can be transmitted through droplets with different sizes. When droplet particles are more than 5- 10 $\mu\text{m}$  in diameter, they will be classified to respiratory droplets. Whereas droplet particles are less than 5 $\mu\text{m}$  in diameter, they are referred to droplet nuclei or aerosols.(17)



In general, mostly transmission of SARS-CoV-2 include direct transmission by cough, sneeze, and droplet inhalation transmission and contact transmission by contact with oral, nasal, and eye mucous membranes.(17) In specific situation, airborne transmission of SARS-CoV-2 can occur such as during medical or dental procedures that generate aerosols or indoor places with poor ventilation.(7) Moreover, the other possible modes of COVID-19 transmission can occur via fecal-oral route, bloodborne, vertical transmission (pregnant women and fetuses) and animals.(2)

In dentistry, dental patients and dental professionals have always been at high risk of infections because they can be exposed to pathogenic microorganisms such as bacteria and virus from the patient oral cavity and respiratory tract. Most of dental practices involve the use of rotary dental and surgical instruments such as high-speed dental handpiece, ultrasonic scalers and air-water syringes. These instruments generate the droplets and aerosols which contain particles of water, saliva, blood, microorganisms, and other debris.(7)

Droplet and aerosol transmission of SARS-CoV-2 are the most important concerns in dental clinics and hospitals due to large amounts of aerosols and droplets mixed with patient's saliva and even blood during dental practice. There is a study found that SARS-CoV-2 virus RNA stay in air samples within aerosols for up to 3 hours and support the airborne transmission.(13) In addition, face to face communication between dentist and patient within 1 meter, can increase risk of respiratory droplet transmission.(39)

Contact transmission can occur because dental professionals have risk of both direct and indirect contact with patient's fluid, patient's materials, and contaminated dental instruments, or getting cut by infected sharp instruments that are possible routes for the spread of viruses.(39, 40)

Secretions or droplets from infected patients can contaminate surfaces and objects, creating fomites or contaminated surfaces. Vital SARS-CoV-2 virus and/or RNA detected by RT-PCR can be found on those surfaces for vary periods from hours to days, depending on type of surface and surrounding environment such as temperature

and humidity. Therefore, transmission may also occur indirectly through touching contaminated surface with virus, followed by touching the mouth, nose, or eyes.(39)

### 2.3.3 Dental guideline during COVID-19 pandemic

Many organizations had announced guidelines for dentistry to prevent the transmission of COVID-19 during dental diagnosis and treatment. On March 16, 2020, American Dental Association (ADA) suggested to postpone elective dental procedures and provide treatment on dental emergency cases only. In addition, there are several protocols such as patient evaluation, hand hygiene, personal protective equipment for the dental professionals, mouth rinse before dental procedures, rubber dam isolation, anti-retraction handpiece, disinfection of the clinic settings, and management of medical waste. On April 8, 2020, Center of Disease Control (CDC) announced in concordance with the ADA.

In Thailand, the department of medical services (ministry of public health) and Thai Dental Council had announced guidelines for dental treatment during the COVID-19 pandemic. The dental guidelines would correspond to the situation and epidemiological information of the COVID-19 outbreak in each area.

#### Level measures 4 Declared state of emergency: Pandemic Phase

If there is a constant increase in the number of infected patients within the country, if there are clusters of infected patients within the country, or if there is widespread infection in many areas, the recommendation is to perform emergency dental procedures only in emergency cases and to consider using the guidelines that were announced by the Department of Medicine in collaboration with the Thai Dental Council, **version date March 30, 2020.**

#### Level measures 3 Active management of a community outbreak and confirmed outbreak.

There is a controllable increase in the number of infected patients within the country, or there is a low incidence of infected patients: no cluster infection, no infected people from abroad, no widespread infection, or the alleviation of low-risk aerosol transmission through social activities.



The recommendation is to perform emergent or urgent dental procedures. In elective cases, dental health care providers have to consider providing dental treatment to only those patients for whom treatment or lack thereof will have negative effects on them. Following the guidelines that were announced by the Department of Medicine in collaboration with the Thai Dental Council, **version date May 14, 2020.**

Level measures 2 Anticipated outbreak

There is no report of a new infected case within the country for at least 28 days or an alleviation of moderate- to high-risk aerosol transmission social activities. The recommendation is to perform every case in non-COVID-19 Patients Under Investigation (PUI) cases under standard precaution. In COVID-19 PUI cases, patients can only get emergent or urgent treatment. Following the guidelines that were announced by the Department of Medicine in collaboration with the Thai Dental Council, version date July 20, 2020.

Level measures 1 No evidence of a global outbreak

The COVID-19 pandemic will either become an endemic disease or there will be effective and efficient vaccines to control the spread of disease.

The recommendation is to provide dental treatment and follow the new normal dental guidelines that will be announced in the future.

**Infection control guidelines in dentistry**

1. There should be an appointment system in advance, either by phone or application.
2. There should be a channel for patients to consult on oral health problems, such as telemedicine or telephone systems, to reduce the risk of traveling to receive services.
3. Advise the patient to visit a dentist alone or with a caregiver or parent. There should be only 1-2 followers.
4. Screen patients and caregivers/parents before dental treatment for COVID-19 fever and symptoms, as well as exposure to people who have the SARS-CoV-2 virus and suggest patients and caregivers/parents always wear a face mask while

waiting for service. patients and caregiver/parent always wear a face mask while waiting for service.

5. Arranging the waiting area for treatment should have a distance of at least 1 meter between the chairs.
6. Any items that cannot be sterilized, such as books or toys, should be removed from the treatment waiting area.
7. The service areas should be classified into 3 areas according to the risk of spreading infection:

1) Staff rest area or office Waiting area for treatment

- Floor and hand contact surfaces should be cleaned with appropriate surface disinfectant at regular intervals.
- Provide an alcohol gel to facilitate hand cleaning for the patient and followers.
- Should provide a ventilation system for at least 2 ACH by local exhaust fan at room wall or open the windows to ventilate for 10-15 minutes every 1-2 hours.
- Consider using an air purification system such as an air purifier with a HEPA filter or another system which have efficient and suitable for the size of the room.

2) Treatment areas that do not generate or have low-level aerosol from the procedure

3) Treatment areas that generate high-level aerosol from the procedure

For treatment areas:

- The direction of the air flow in the room should be controlled by positioning the air supply to allow air to flow from the cleaner area to the less clean area.
- Should provide a 3-air Air Change per Hour (ACH) ventilation system and air purification with a High Efficiency Particulate Air Filter (HEPA Filter) or other system that provides a combined effective of not less than 12 ACH.

8. Personal protective equipment worn by dentists, dental assistants, and relevant personnel is classified into 3 types:

1) Standard PPE



2) Full PPE



3) Maximum PPE



9. Properly wash your hands with disinfectants.

10. Preparation before treatment

10.1) Allow only necessary things for treatment in the treatment room.

10.2) Cover all contact surfaces with a disposable material, such as plastic wrap, and replace after treatment for all patients.

10.3) Avoid or reduce the use of paper documents (paperwork) in the treatment room. If there is a need to use it, it should be kept to a minimum and appropriate anti-contamination practices should be applied.

11. Pre-operation mouth rinse with 0.2% povidone iodine mouthwash 30 seconds or 1% hydrogen peroxide 1 minute.

- 0.2% povidone iodine is contraindicated in patients with abnormal thyroid function, a history of allergies to iodine, kidney disease, pregnancy, the lactation period, or children under 6 years old.

- 1% hydrogen peroxide should be used with caution because it may cause irritation. Therefore, it is prohibited to use in the elderly, patients with dry mouth or little saliva, and patients who have mouth ulcers or tooth extraction wounds..

- In the case of patients who cannot control swallowing, such as pediatric patients or elderly patients. Using gauze or cotton moistened with a mouthwash to wipe in the oral cavity instead of rinsing the mouthwash.

12. There are 3 indications for radiography during the COVID-19 pandemic.

1) Level measures 4 Declared state of emergency: Pandemic Phase

Avoid intraoral radiographic examination and recommend using extraoral radiographic examination such as lateral oblique, occlusal topographic, panoramic, or small FOV CBCT.

2) Level measures 3 Active management of a community outbreak and a confirmed outbreak

2.1) Before an intraoral radiographic examination, the patient should be asked about easy vomiting when something is in their mouth. If they are easily vomiting, an extraoral radiographic examination is recommended.

2.2) Use caution when taking intraoral radiographic examinations, especially periapical images, in areas that may cause coughing or a gag reflex.

2.3) Consider using a panoramic instead of more than four periapical images if there is a panoramic available in the dental clinic.

3) Level measures 2 Anticipated outbreak

Radiography can be performed normally by adhering to the principles of radiography as needed for examination, diagnosis, and dental treatment.

13. Using high volume evacuation (intraoral high-power suction) in every case.

14. In cases where dental workpieces need to be extraorally finished or polished, they should be properly soaked in the disinfectant agent before procedures. Moreover,

dental workpiece finishing and polishing should be done in conjunction with the use of extraoral high-power suction or trimmed in a plastic box to reduce dispersion.

#### 15. Surfaces and environment management

15.1 Wipe and clean the surface after the completion of each patient's treatment with a suitable surface disinfectant in proper concentration and time so that COVID-19 pathogens can be destroyed.

15.2 In the event of continuous treatment, the surface should be cleaned and have ventilation in the dental office, or the time should be spaced out as recommended by the CDC guidelines, before starting treatment for the next patient.

15.3 Surfaces in other service areas, such as the information desk and the payment point, should be properly wiped and cleaned. In addition, there is alcohol gel for hand cleaning at every service point.

15.4 Management of contaminated fabrics, including blood stains and secretions: they should be packed separately in a red plastic bag, not more than 2/3 bags, and sent to be cleaned according to the standard for washing for infection.

15.5 Staff or maids cleaning surfaces and the environment must wear protective equipment, such as a mask, face shield, glasses, waterproof apron, and thick rubber gloves.

16. Dispose of infectious waste properly in infected waste bags (red bags).

17. Apply physical distancing measures to appropriate patient management.

18. Provide answers or advice about self-care after treatment to patients via telephone channels or other suitable channels.

#### 2.3.4 Impact of COVID-19 pandemic toward dental treatments and dental patients

from the emerging COVID-19 disease, which the medical profession has never known about before, including severity, treatment, prevention, and knowledge about the COVID-19 transmission route in dentistry. This makes it necessary to study and investigate in parallel with the epidemic, like any previous disease. Therefore, infection-control measures in dentistry were reviewed, and new measures were established to suit the situation and prevent the spreading of this disease.

In addition to the concern about infection from the daily lives of the people, Dental visits are likely to be a cause of concern for COVID-19 infection. Therefore, a

study was conducted to investigate the perception, attitude, knowledge, or practice of dental patients during COVID-19. The results of the study will help the dental health care providers have a better understanding of the patient and provide information about COVID-19 and dentistry to the patients. Thus, it may increase the patient's knowledge and confidence in receiving further dental treatment.

There are several studies from other countries about the perception, attitude, knowledge, or behavior of dental patients during COVID-19, but there are none in Thailand. Those studies are described below.

Peloso et al. studied the impact of quarantine on dental treatment and patients' anxiety levels during COVID-19. Five hundred and ninety-five dental patients from private clinics located in three different regions of Brazil had answered the online Google Form questionnaire. The results showed that 28.6% of respondents had anxiety about COVID-19. Fifty-nine-point five percent of them were undergoing dental treatment, and 66.7% are patients who received orthodontic treatment. For the opinion about attending a dental appointment, only 5% were afraid because dentists are a high-risk group for contamination, but most of them (56.3%) had no concern about it. The opinions about how quarantine might affect the dental treatment plan revealed that patients were mostly unconcerned (51.5%), and only 17% of them were afraid that their oral condition would worsen or waste the investment. Further, patients' opinions about the important measures that dentists should follow included 63.9% using disposable laboratory coats, 67.4% using disposable masks, 85.4% having alcohol gel, 63.5% avoiding close contact with other patients at reception, and 41.8% using personal protective equipment for patients. (21)

In May 2020, Moffat et al. investigated patient perceptions about professional dental services during the COVID-19 pandemic in the USA. Four hundred and forty-nine participants answered the electronic survey. Eighty-four and seventy-two percent of participants visited their dentists at least annually and brushed their teeth twice a day. The results were reported as a score (1–7; strongly agree to strongly disagree) on a 7-point Likert scale. Patients were more concerned about contracting COVID-19 from other patients (mean score = 3.3) than from dental professionals (mean score = 3.7). Regarding attitudes toward contracting COVID-19 from attending a dental appointment,

the opinion that contracting COVID-19 is more hazardous to their health than not attending a dental check-up appointment (mean score = 2.6), a dental appointment for restorative work (mean score = 2.9), or a dental appointment to resolve dental pain or infection (mean score = 3.9) They quite trust their dental clinic to comply with governmental recommendations for suitable dental treatment (mean score = 2.2). Besides, they will feel comfortable returning to dental appointments when public health officials announce that dental treatments carry a minimal risk of getting COVID-19 (highest mean score = 2.6) and if there are available COVID-19 vaccines (mean score = 2.7). (23)

Dorota et al. studied the psychological functioning of patients who underwent oral surgery procedures during the COVID-19 pandemic in Poland. One hundred and seventy-five patients were divided into 3 groups by different timing as follows: before the COVID-19 pandemic (N = 47), during the COVID-19 outbreak with severe restriction (N = 57), and after the lifting of the most severe restriction (N = 71). Only 128 patients in the COVID-19 outbreak group completed the COVID-19 questionnaire. The results presented showed that 83.6% of the patients felt safe while they were at the dental clinic and saw dental professionals and staff with a high level of protection. Eighty-five-point two percent of them take precautions to prevent infection, such as washing hands, avoiding touching door handles, or avoiding contact with people. Twenty-two percent of patients reported feeling more anxious than before the COVID-19 outbreak. They were also concerned that their friends or family would be infected to a degree of 59.4 percent. The Modified Dental Anxiety Scale (MADS) questionnaire, the ED-5Q questionnaire (function and quality of life in five dimensions), and the EQ-VAS questionnaire (patients' health assessment) were done by three groups. In comparison to the time before the pandemic, 21.9 percent of respondents reported increased anxiety about a dental appointment, according to the survey. This epidemiological condition has resulted in a significant increase in moderate dental anxiety (M = 11.4) among oral surgery patients. The impact of the coronavirus pandemic and quarantine reduced the quality of patients' health (EQ-VAS) by 10%. (24)

Bains et al. studied the knowledge, attitude, and practices (KAP) of dental patients toward cross-infection and its economic implications during COVID-19 in India.

Four hundred and seventy-eight participants responded to the online Google Form questionnaire. The study reported that 92.2% of the respondents had high knowledge about COVID-19, but only 48.1% had high knowledge about infection control in dental clinics. The responders scored well in practice related to COVID-19 prevention (83.9%) and attitude toward infection control in dental clinics (91.9%). Seventy percent of them knew that COVID-19 could be transmitted through aerosol, as well as the importance of taking a history and the role of saliva in the transmission of disease. Moreover, practice regarding COVID-19 transmissions showed a significant positive correlation with knowledge of infection control ( $P < 0.001$ ) and attitude toward infection control in dental clinics ( $P < 0.001$ ).<sup>(27)</sup>

The study by Ahmed et al. evaluated patients' knowledge, attitude, and practice (KAP) of dental cross-infection control during the COVID-19 pandemic in Pakistan. Most participants among the 750 patients (97%) agreed that COVID-19 is a highly contagious disease. There was a similar portion of patients who agreed (42.1%) and disagreed (45.5%) that the common route of COVID-19 transmission is through aerosol generated during dental procedures. About 75% agreed with daily screening for not only patients but also dental health care providers. Seventy-nine percent agreed that extra-oral suction or cross ventilation could control the spreading of aerosol, while 77.33% agreed that dental surgery should have it to control aerosol spread. Most patients agreed that dentists should be asked about cross-infection control measures such as sterilization protocols (60%), waste disposal protocols (87.6%), or management of patient appointments to avoid crowding (74.26%).<sup>(26)</sup>

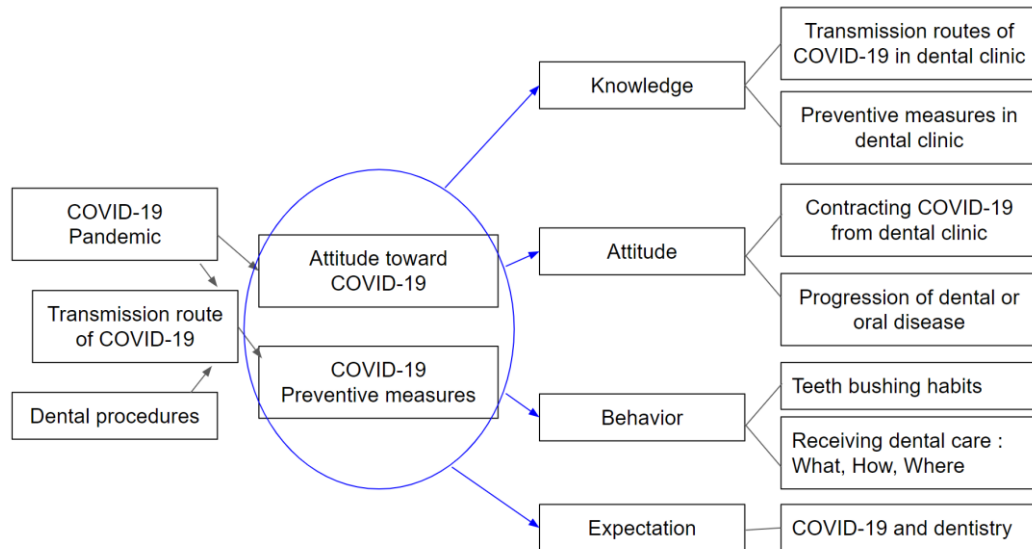
One thousand three hundred and thirty Italians responses to dental care access during the COVID-19 pandemic were investigated by Aquilanti et al. The results of this study revealed that about 61.2% of participants said they go to dental offices for regular visits, while 27.5% said they only go for emergencies. Moreover, 93.2% of participants who visit a dentist normally declared that they went to private dental clinics, and 82.8% had a positive experience. The proportion of respondents and the main reason to cancel a dental appointment showed that 59.7% had no urgency for treatment, 15.1% feared COVID-19 infection, and 8.9% had lowered economic income. 82.4% of respondents had a high sense of trust in the dentist.<sup>(22)</sup>



In February 2020, Sun et al. surveyed the knowledge and attitudes toward COVID-19 among parents of child dental patients during the COVID-19 outbreak in China. One hundred and forty-eight parents were interviewed by telephone in a randomized. Most of the parents thought that the dental department environment was more dangerous than other public places (66.22%) and dental treatment could be a cause of virus infection to their child or children (91.89%) through droplets (95.95%), blood (72.97%), dentists (68.92%), and medical instruments (66.22%). 83.78% of them would take their children to a dental department in the case of severe toothache. However, about 80% felt confident in the dental department after they were informed about the preventive measures.(41)

In addition, mothers' knowledge, attitudes, and fears about dental visits during the COVID-19 pandemic were investigated by Farsi et al. in Saudi Arabia. The number of respondents who took the online survey was 833. About their COVID-19-related practices at home, most of them trusted the Saudi Ministry of Health for COVID-19 information (68%). 26 percent were very worried that their children would contract the virus from the dental clinic. In the part of the questionnaire regarding knowledge of COVID-19, they believed that cross-infection in the dental clinic occurs by transmission from patient to staff (79%), staff to patient (77%), and patient to patient (62%). Seventy-six percent of respondents believed that viruses could be transmitted through asymptomatic patients. Thirty-six percent of them believed that dental clinics were more risky than other public places. Willingness to visit a dentist was mentioned, and the development of vaccines was a factor that made them feel comfortable taking their children to visit a dentist (40%), leading to a close to marked decline in daily positive cases (39%). About attitude toward visiting a dentist, orthodontic treatment, and emergencies were the main reasons for dental visits during the pandemic. Most of them (82%) believed that dental personnel wearing PPE and changing gloves frequently were very important measures against COVID-19.(25)

2.4 Conceptual framework



## Chapter III

### Materials and methods

#### 3.1 Study population and sample size

3.1.1 Study population: Thai dental patients who are resident in Thailand during COVID-19 pandemic.

#### 3.1.2 Sample size:

Sample size is calculated based on Slovin's Formula.

$$n = N / (1 + Ne^2)$$

$$n = 51,883,501 / [1 + 51,883,501 (0.05)^2]$$

$$n = 399.99 = 400$$

Where: n = Number of samples

N = Total population = 51,883,501

N is number of Thai populations aged 18 years and over which came from National Statistical Office, Thailand (2019)

e = Error tolerance (level) = 0.05

When Confidence level is 95 percent (alpha level = 0.05)

The number of sample size calculated from this formula is 480 participants, if compensation is 20%.

#### 3.1.3 Sample selection

- Inclusion criteria
  - Respondents who can read, write, and communicate in Thai language fluently.
  - Respondents who agree to participate in the study.
  - Respondents aged 20 years and over.
- Exclusion criteria
  - Thai patients who live outside of Thailand during COVID-19 pandemic.
  - Respondents who are dentist.

## 3.2 Data collection

An online survey was created using free-access Google Forms and disseminated via social media (Facebook, Messenger, and Line) during June 2022 to determine which dominant variants of SARS-CoV-2 were Omicron. Furthermore, the online survey link was changed to a QR code and printed on handbills, which were sent to a dental clinic or hospital in Thailand. Respondents would have an incentive to answer the questionnaire by having a chance to win a 500-baht fuel gift card, for a total of 100 prizes worth 50,000 baht.

## 3.3 Questionnaire development

### 3.3.1 Item selection

The questionnaire (Appendix 2) in this study was developed from previous studies (20–27) and patient opinions through a qualitative interview (Appendix 1), which was done by 10 participants between January and February 2022. Before responding to the first section, participants must answer the question to be identified as Thai patients who lived mostly in Thailand during the COVID-19 pandemic and were not dentists.

The questionnaire consists of 3 sections; the first section was demographic data, the second section was question about attitude toward COVID-19 pandemic, the third section was some specific question about COVID-19 related to dentistry including knowledge, attitude, behavior, and expectation toward dental treatment during COVID-19 pandemic.

#### Section 1 Demographic data

Questionnaires in this section include gender, age, medical problem, level of education, career, amount of income during the epidemic of COVID-19, the effect of COVID-19 to financial status, residential province, history of COVID-19 infection and COVID-19 vaccination, and the channel for following COVID-19 news.

#### Section 2 Attitude toward the COVID-19 pandemic

Questionnaires in this section include attitudes and anxiety about contracting COVID-19 from daily life. Cronbach's alpha is 0.917.

The level of attitudes was classified into five levels following a 5-point Likert scale.

- 1 = Not at all
- 2 = Slightly
- 3 = Moderately
- 4 = Very
- 5 = Extremely

Section 3 Question about COVID-19-related dental treatments, including knowledge, attitude, behavior, and expectations toward dental treatment during the COVID-19 pandemic

In this section, the questionnaires were classified into 4 parts. The first part is knowledge about COVID-19 related to dentistry. The question will ask about the transmission route of COVID-19 in dentistry (5 questions). In addition, the patient's perception about preventive COVID-19 measures in dentistry will be assessed.

The second part is attitude and anxiety toward dental treatment during the COVID-19 pandemic. The questionnaire includes questions about the anxiety of contracting COVID-19 from dental treatment as well as concerns about oral health deterioration if a dental visit was interrupted due to COVID-19. Moreover, attitudes toward risk factors of COVID-19 infection during dental treatment or in a dental clinic, as well as factors that affect confidence about safety in a dental clinic, were included. Cronbach's alpha is 0.916.

The level of attitudes and anxiety was classified into five levels following a 5-point Likert scale.

- 1 = Not at all
- 2 = Slightly
- 3 = Moderately
- 4 = Very
- 5 = Extremely

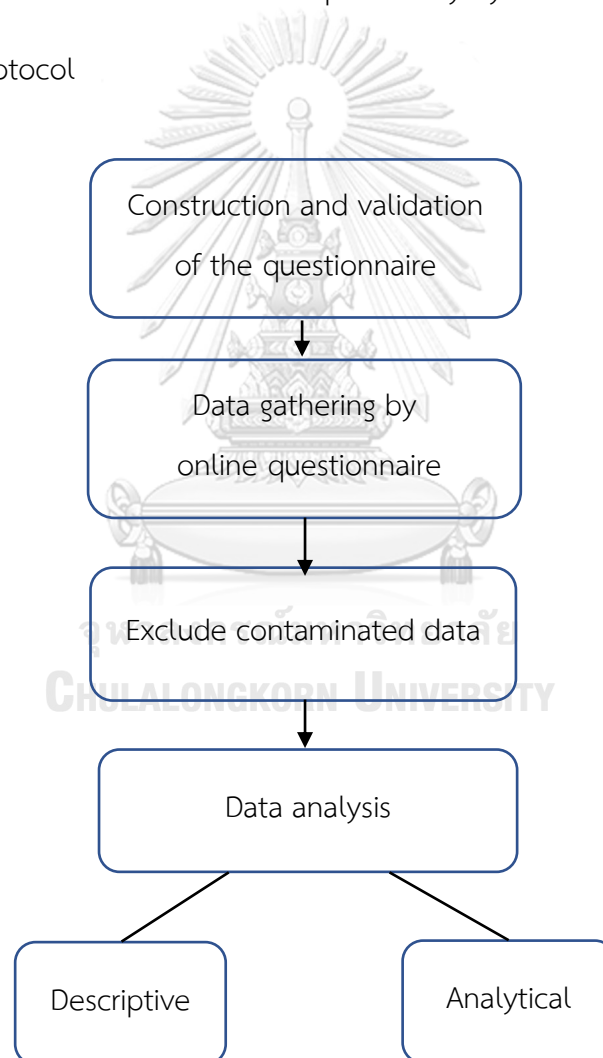
Then, the questionnaires about behavior or practice toward receiving dental treatment before and during the COVID-19 pandemic were the third part. The questionnaire includes information on the dental care of patients and the reasons for receiving or refusing dental treatment during the COVID-19 pandemic.

The last part is the patients' expectation or opinion that a dental health care provider or public policy will increase their confidence in receiving dental treatment safely and conveniently.

### 3.3.2 Reliability, validity, and consistency of the questionnaire

The items in Section 1 were demographic and general data, so they did not require reliability and validity testing. Items in Sections 2 and 3 about attitudes were tested for reliability, validity, and consistency by four experts in dentistry, and Cronbach's alpha was calculated from a pilot study by SPSS.

### 3.4 Research protocol



### 3.5 Statistical analysis

All descriptive data were analyzed using descriptive statistics (frequency, percentage, mean, and median). The Chi-square test was used to analyze the

associations between attitude and demographic data, attitude and knowledge, and attitude and behavior. The comparison of concern levels between contracting COVID-19 from daily life and contracting it from a dental visit, and between contracting COVID-19 from a dental visit and about oral health problems. If dental visits were interrupted due to the spread of the coronavirus, a paired T-test would be done if the data had a normal distribution or a Wilcoxon signed rank test if the data had a skewed distribution. Kolmogorov-Smirnov was used for the normality test. IBM SPSS version 22 was used to analyze the data. All data were considered significant when the p-value was less than 0.05.

### 3.6 Ethic approval

This study was approved by the ethics committee for human research at the Faculty of Dentistry, Chulalongkorn University (project number HREC-DCU 2021-091, approval number 105/2021).



## 3.7 Research schedule

Activity Month	2021						2022											2023					
	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	
Literature Review and Proposal Writing	✓	✓	✓	✓	✓																		
Ethics approval						✓	✓	✓															
Equipment preparation					✓	Question for qualitative interview				✓	Questionnaire construction for online survey												
Data collection								✓	Qualitative interview				✓	Online survey									
Distribution the prizes for lucky winner														✓	✓								
Data analysis															✓	✓	✓	✓	✓				
Writing Report /Publication																	✓	Qualitative interview				✓	Online survey

## 3.8 Budget

1. Compensation as money or gift for qualitative interview participants	10,000
2. Winning prize for 100 lucky draw winners for online survey participants	50,000
3. Recording device and data backup storage	5,000
4. Phone bill payment	2,000
5. Mailing cost of the prizes	10,000
6. Document	3,000
Total	80,000 Baht



## Chapter IV

### Results

#### 4.1 Demographic data

The online survey received 1093 responses. Of these, 115 were excluded because 7 respondents lived abroad, 35 were dentists, 48 declined to participate in the study, and 25 were under the age of 20. The final sample comprised 978 respondents. The demographic characteristics of the sample are presented in Table 1.

Table 1 Demographic characteristics

Characteristics	Number of Participants (%)
<b>Gender</b>	
Male	337 (34.5%)
Female	636 (65.0%)
Not specified	5 (0.5%)
<b>Age (year)</b>	
20-40	418 (42.7%)
40-60	372 (38.0%)
>60	188 (19.2%)
<b>Medical status</b>	
Healthy	706 (72.2%)
Underlying disease	272 (27.8%)
<b>Region</b>	
Capital city (Bangkok)	422 (43.1%)
Provincial city	556 (56.9%)
<b>Monthly income (Baht)</b>	
< or 5,000	64 (6.5%)
5,001 – 15,000	156 (16.0%)
15,001 – 25,000	205 (21.0%)
25,001 – 50,000	313 (32.0%)

>50,000	240 (24.5%)
Education level	
Lower than primary school	1 (0.1%)
Primary school	14 (1.4%)
Secondary school or vocational certificate	85 (8.7%)
Bachelor's degree or diploma	569 (58.2%)
Master's degree or higher	309 (31.6%)
Healthcare or public health worker	
Yes	258 (26.4%)
No	720 (73.6%)

Eight hundred and fifty-five participants (87.4%) lived with family. Four hundred and forty-one participants (45.1%) had family members in the risk group, including children under the age of 5, pregnant members, people over the age of 60, bedridden patients, and patients in the seven chronic disease groups. If people in the risk group become infected with COVID-19, they may experience severe symptoms. Note: The 7 chronic disease groups consist of chronic respiratory disease, cardiovascular disease, chronic kidney disease, stroke, obesity, cancer, and diabetes.

Most of them, 98.8%, were vaccinated, and eighty-seven percent (87.1%) received three or more doses of the vaccine. In the unvaccinated group, most were concerned about the side effects of the vaccine. Twenty percent (20.3%) of respondents had COVID-19 infection, with the majority (88.4%) reporting mild symptoms. Sixty-seven-point six percent of those reporting close relatives, such as family members or coworkers, had been infected with COVID-19, and most of them had mild symptoms (80.3%) as well.

The top three channels for respondents to receive information about COVID-19 were Facebook (36.5%), television (33.2%), and Line (14.1%), respectively. For information about COVID-19 preventive measures in dental clinics, 60.9% had received it.

#### 4.2 Attitudes toward the COVID-19 pandemic

The participants' perception of the risk of contracting COVID-19 in everyday life (Figure 1) has a mean of 3.20 and a median of 3. The level of concern about contracting COVID-19 from daily life in the past 6 months (Figure 2) has a mean of 3.06 and a median of 3. If the government cancels wearing a mask, the level of concern about COVID-19 infection (Figure 3) has a mean of 3.7 and a median of 4.

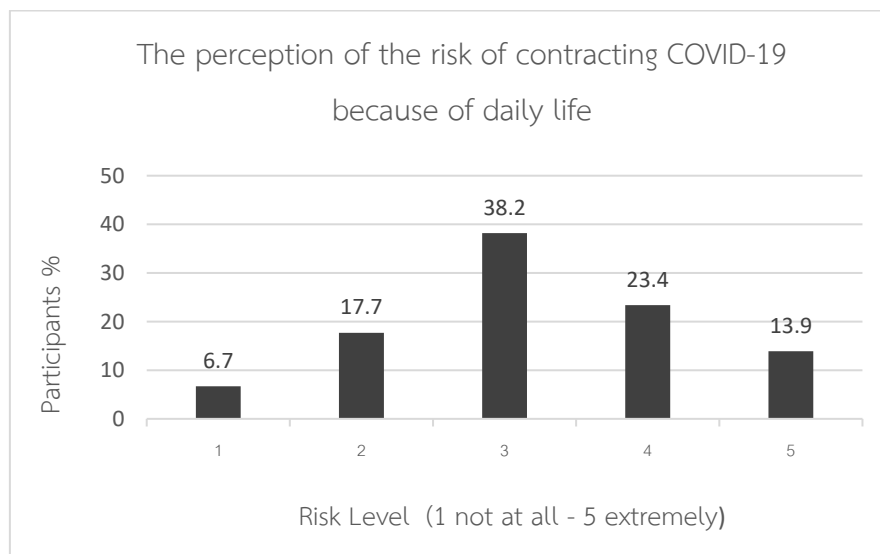


Figure 1 The perception of the risk of contracting COVID-19 because of daily life

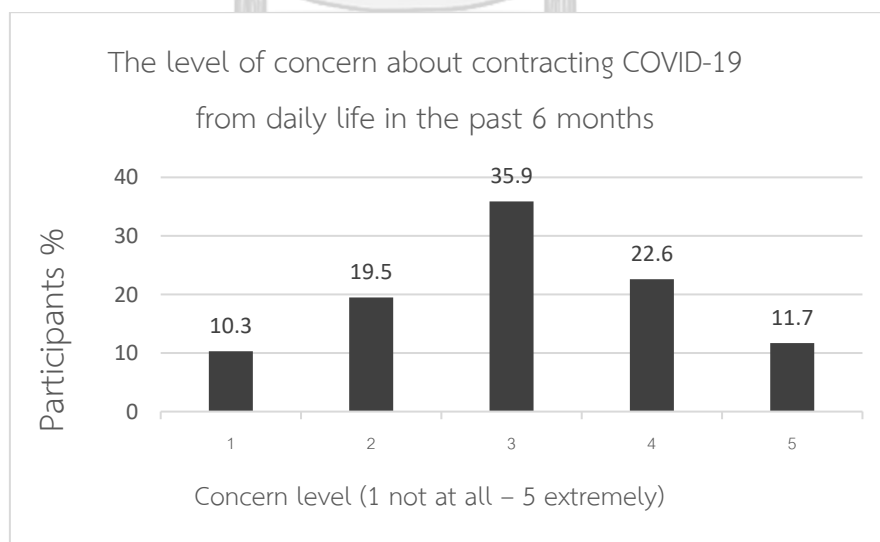


Figure 2 The level of concern about contracting COVID-19 from daily life in the past 6 months

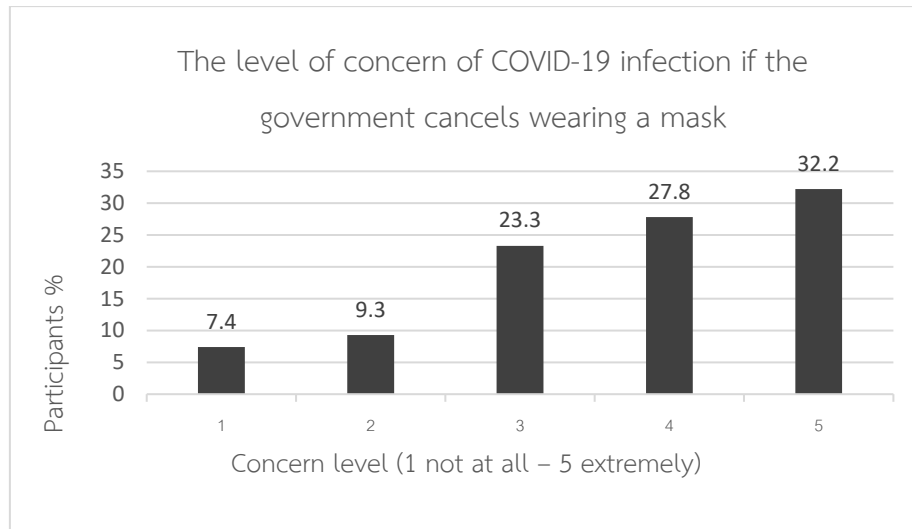


Figure 3 The level of concern about COVID-19 infection if the government cancels wearing a mask

If participants were infected with COVID-19, the level of concern in following issues as details in Figure 4 (mean and median) were severe symptoms or death (2.8 and 3.0), long COVID (3.24 and 3.0), carrier (3.29 and 3.0), impact on studying or working (3.04 and 3.0), access to treatment (2.96 and 3.0), and treatment cost (2.83 and 3.0).

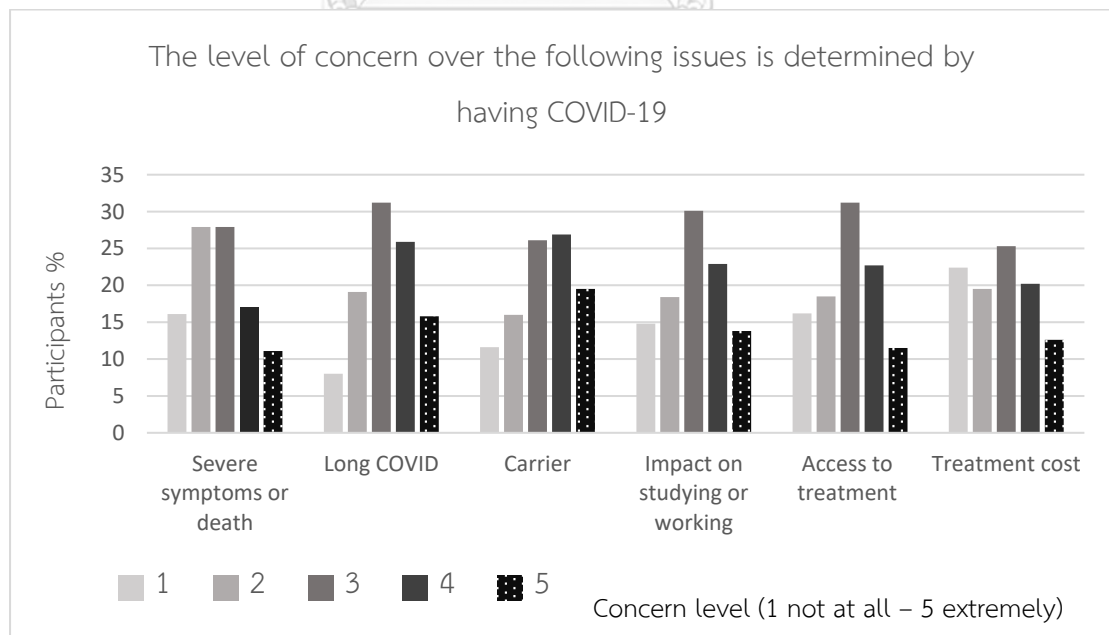


Figure 4 The level of concern over the following issues is determined by having COVID-19

### 4.3 COVID-19-related dental treatments

#### *Knowledge, attitudes, behavior, and expectation toward dental treatment during the COVID-19 pandemic*

##### *Knowledge*

Table 2 Knowledge about dental treatment in dentistry

Statements	Answer (Participants %)		
	True	False	Not sure
COVID-19 can spread through breathing	82.9	10.7	6.5
COVID-19 can be transmitted through contaminated surfaces	95	2.3	2.7
The COVID-19 virus can be found in saliva	94.3	2	3.7
COVID-19 can spread through droplets caused by dental treatment in infected patients	92.9	1.1	6
Treatments like filling, scaling or surgically removing wisdom teeth can produce aerosols	89.7	1.9	8.4

The knowledge section would include questions about the transmission of COVID-19 both in general and in dentistry. The respondents would choose whether the following statements were correct or not. Most respondents answered correctly, but in some statements, less than 90% of those who answered correctly were COVID-19 can spread through breathing (82.9%) and dental treatments such as fillings, scaling, or surgically removing teeth can produce aerosols (89.7%).

##### *Attitude*

The participants had a mean and median level of concern of 3.23 and 3.0 about contracting COVID-19 from a dental visit (Details in Figure 5). The level of concern about oral health problems if dental visits were interrupted due to COVID-19 had a mean and median of 3.4 and 3.0, respectively (Details in Figure 6).

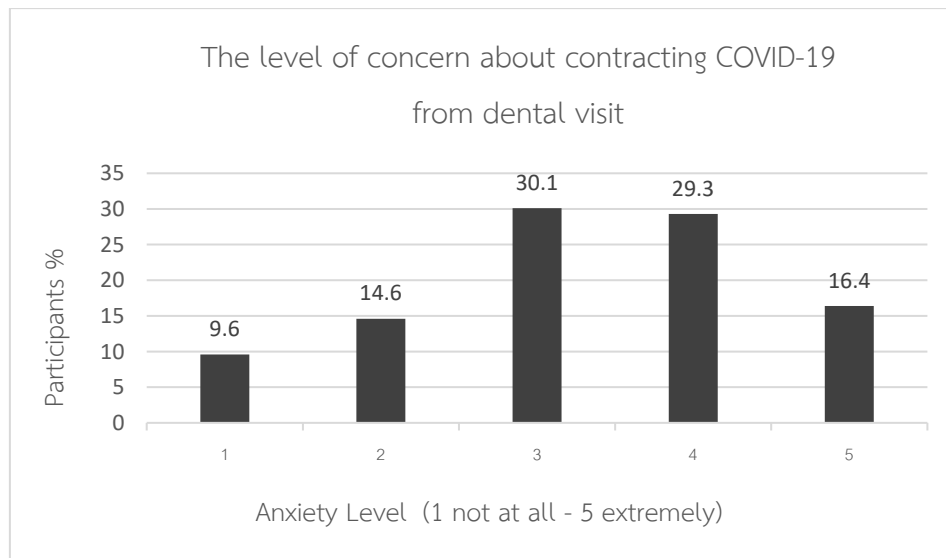


Figure 5 The level of concern about contracting COVID-19 from a dental visit

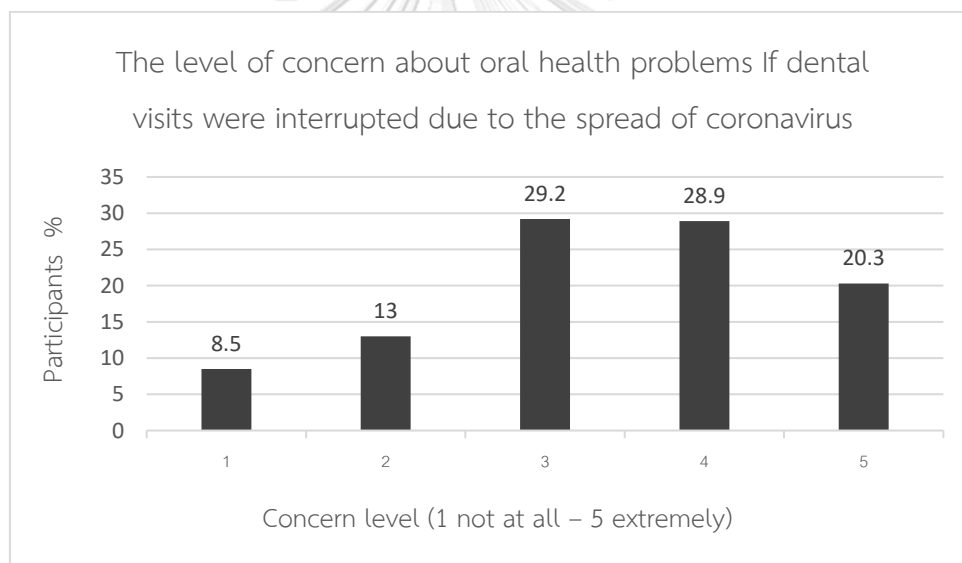


Figure 6 The level of concern about oral health problems If dental visits were interrupted due to the spread of coronavirus

The average risk level of contracting COVID-19 from dental visits was as follows (mean and median): From the waiting area before receiving dental treatment (2.30 and 2), from dental professionals such as dentists and dental assistants (2.41 and 2), from removing the mask during treatment (3.11 and 3), and from the dental instruments brought into your mouth (2.69 and 3) as details in Figure 7.

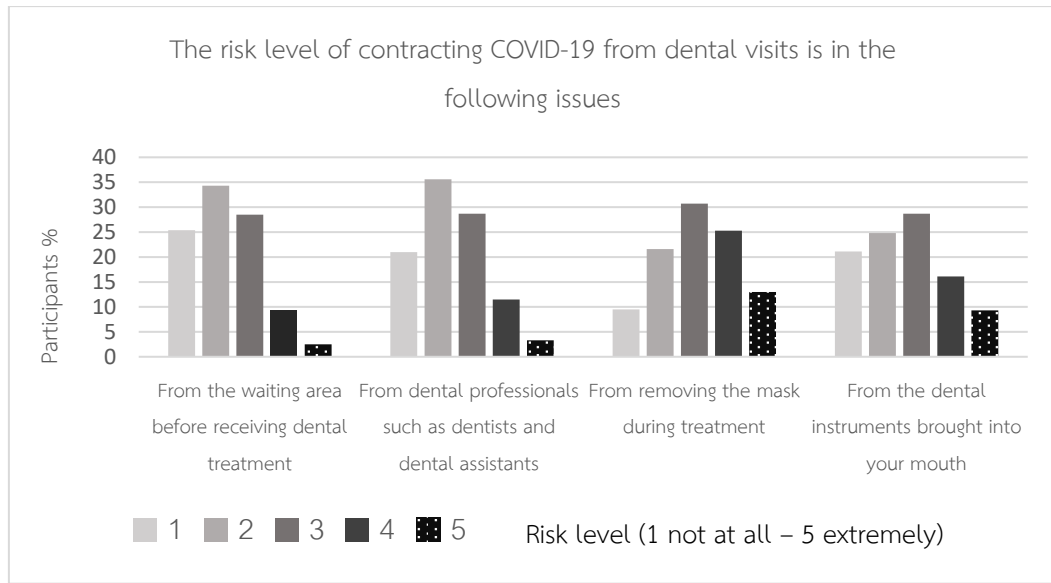


Figure 7 The risk level of contracting COVID-19 from dental visits is in various issues

While the average confident level of not contracting COVID-19 from dental visits was as follows (mean and median): if you have been vaccinated against COVID-19 (2.99 and 3), if the dentist and staff are tested for COVID-19 before working (3.47 and 4), if patients are tested for COVID-19 before treatment (3.37 and 3), and if the dentists and staff strictly follow the COVID-19 preventive measures (3.66 and 4) as details in Figure 8.

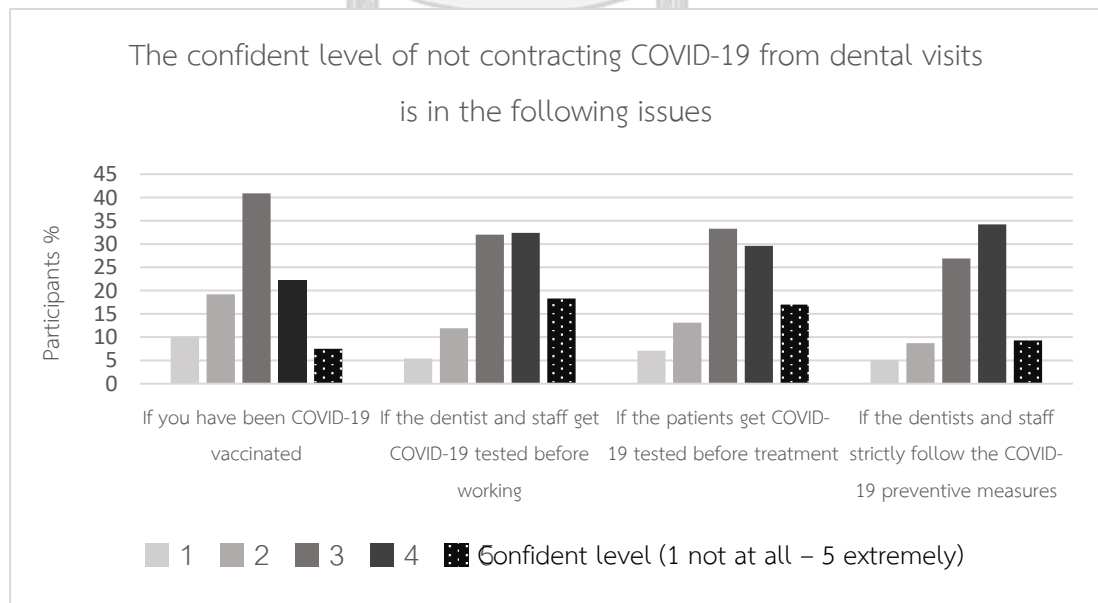


Figure 8 The confident level of not contracting COVID-19 from dental visits is in various issues

Behavior

Behavioral changes of teeth brushing habits between the prior COVID-19 pandemic and during the COVID pandemic can be seen from the diagram in Figure 9. There were 50 respondents who had better brushing habits, while 16 respondents had worsening habits (Figure 10).

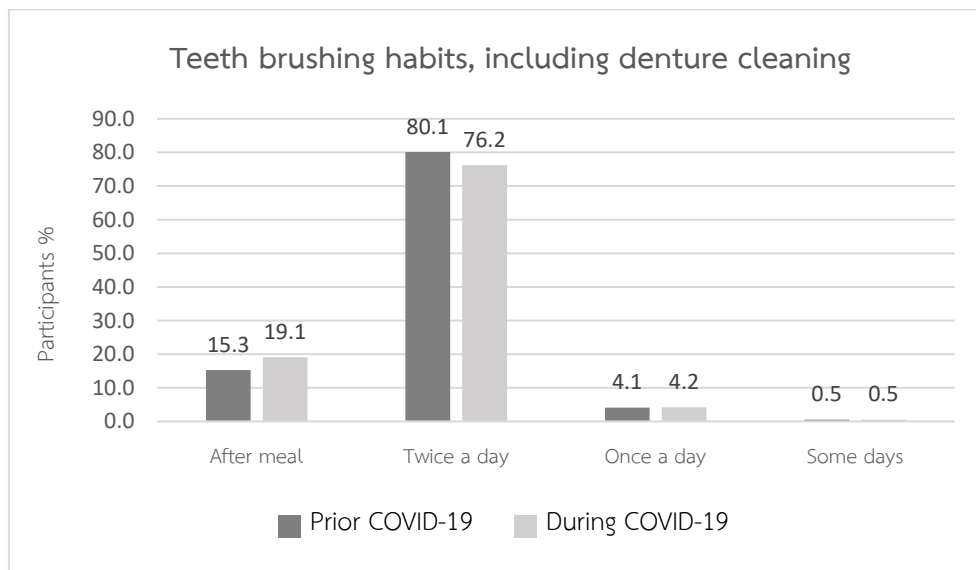


Figure 9 Teeth brushing habits, including denture cleaning prior and during COVID-19 pandemic

**Brushing habits, including denture cleaning [prior to the COVID-19 pandemic] \* Brushing habits, including denture cleaning [during the COVID-19 pandemic] Crosstabulation**

Count

		Brushing habits, including denture cleaning [during the COVID-19 pandemic]				Total
		some days	once a day	twice a day	after meal	
Brushing habits, including denture cleaning [prior to the COVID-19 pandemic]	some days	5	0	0	0	5
	once a day	0	35	3	2	40
	twice a day	0	6	732	45	783
	after meal	0	0	10	140	150
Total		5	41	745	187	978

Figure 10 Chi-square table that shows the behavior of respondents before and during the COVID-19 pandemic

Behavioral changes in receiving dental treatment between the prior COVID-19 pandemic and during the COVID pandemic can be seen from the diagram shown in



Figure 11. Dental visits twice a year decreased from 23.1% in the pre-COVID period to 9% during the COVID-19 outbreak. Meanwhile, the number of people who did not obtain treatment increase from 8.1% in the pre-COVID period to 36.3% during the coronavirus pandemic.

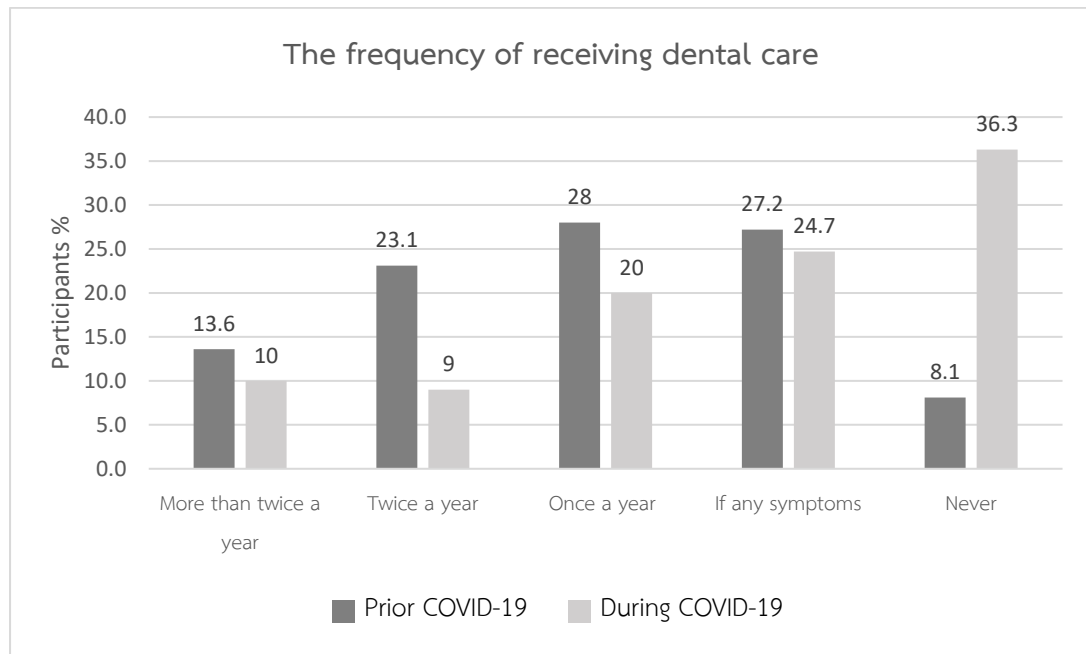


Figure 11 The frequency of receiving dental care prior and during COVID-19 pandemic

Before the COVID-19 outbreak, of 922 patients who visited a dentist, 503 (54.6%) went for annual dental check-ups, 317 (34.4%) had symptoms, and 90 (9.8%) had orthodontic treatment. During the COVID-19 pandemic, of the total 639 patients who visited the dentist, 277 (43.4%) had annual dental check-ups, 267 (41.8%) had symptoms, and 78 (12.2%) had orthodontic treatment. The chart in Figure 12 shows the reasons for seeking dental care.

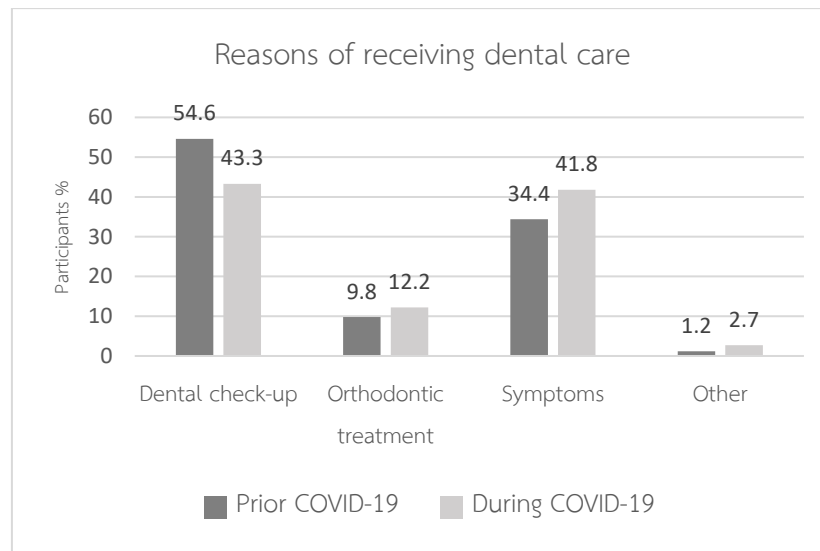


Figure 12 Reasons for receiving dental care prior and during COVID-19 pandemic.

For the group of participants who did not receive any dental treatment during the COVID-19 pandemic, 364 people gave reasons for not going as follows: 145 (39.8%) had no symptoms, 98 (26.9%) were worried about contracting COVID from dental work, 79 (21.7%) told that the clinic or hospital was closed due to COVID-19 pandemic, and 13 (3.6%) have problems with treatment costs. The chart in Figure 13 shows the reasons for not receiving dental treatment.

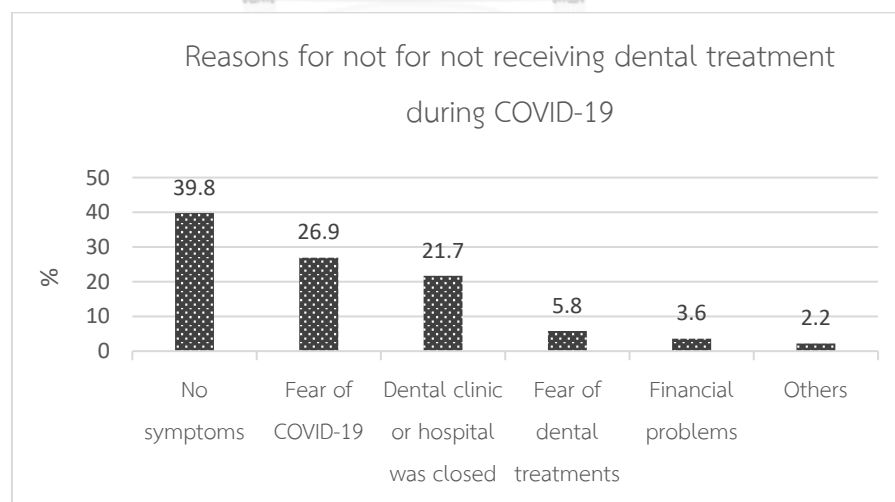


Figure 13 Reasons for not receiving dental treatment during COVID-19 pandemic

The participants were asked more specifically about receiving dental care in the past six months, which was during the outbreak of the Omicron species. It was found that 386 of the 639 participants (60.4%) had dental work during this period. Most patients—about 91%—received dental treatment normally. The others got dental examinations but were not treated because of non-urgent or emergency cases (4.3%), aerosol-generating procedures (3.3%), and other reasons (1.5%).

The top 3 dental clinics for patients both pre-COVID-19 and during COVID-19 were in a similar proportion: private clinics 54.1% and 54.9%, government hospitals 22% and 19.6%, and private hospitals 10.6% and 11.9%, respectively.

After categorizing dental service places into 3 groups in Figure 14: private clinics or hospitals; government hospitals; and the faculty of dentistry to study the provision of dental services to the public during the six-month outbreak of omicron, most patients received normal treatment. There are only a few patients that have not received treatment due to the limitations of the COVID-19 situation, especially government hospital patients (18%).

**Place for dental visit \* How dental visit during Omicron Crosstabulation**

			How dental visit during Omicron		Total
			Received normal treatment	Not received treatment due to aerosol generating procedure or not emergency	
Place for dental visit	Private dental clinic or hospital	Count % within Place for dental visit	242 94.2%	15 5.8%	257 100.0%
	Government hospital	Count % within Place for dental visit	73 82.0%	16 18.0%	89 100.0%
	Faculty of dentistry	Count % within Place for dental visit	37 92.5%	3 7.5%	40 100.0%
Total		Count % within Place for dental visit	352 91.2%	34 8.8%	386 100.0%

Figure 14 Chi-square table that shows the behavior of dental visits in different places

Perception of patients toward COVID-19 preventive measures in dental clinic were shown in Figure 15. The top 3 measures that patients can perceive are body temperature measurement (81.5%), patient triage or COVID-19 screening (78.2%), and dentists wearing disposable gloves (76.4%). While the measures that were less perceived by the patient consist of having a dental clinic with a proper ventilation and air purification system (54%), cleaning the surface of the dental chair after each case (49.3%), and periodically cleaning the surface (48.4%).

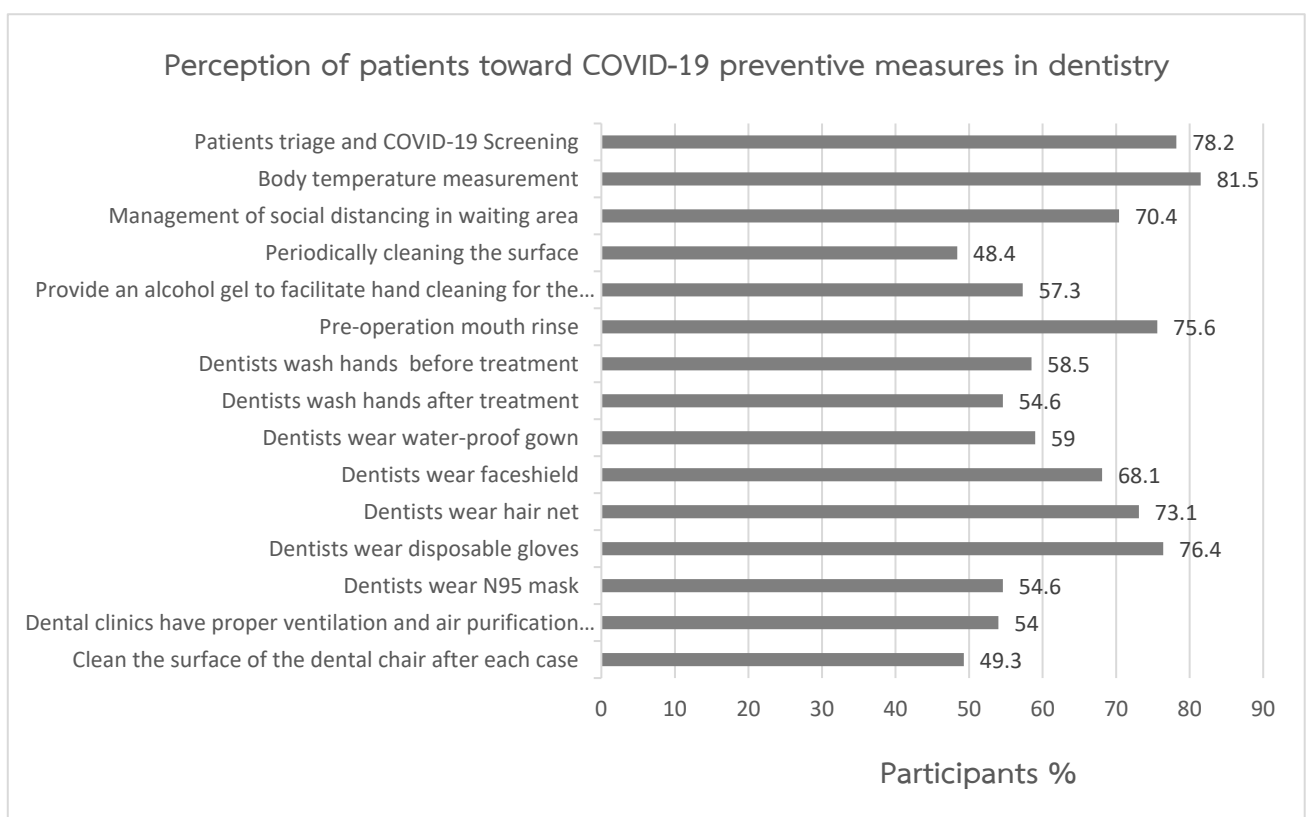


Figure 15 Perception of patients toward COVID-19 preventive measures in dentistry

Participants' opinions on dental services during the current and future pandemic periods were shown in Table 3. About 58.5% of participants agreed with the situation that patients with COVID-19 who have oral health problems or symptoms can receive dental treatment if the clinic or hospital has measures to prevent the spread of COVID-19. For those who responded to other comments, an explanation has been added to explain that providing dental treatment to COVID-19 patients should be considered on a case-by-case basis, such as in cases of urgency or emergency oral health problems. If there is a necessity, it may be done in an isolation room for COVID-19 patients or a negative pressure room. People with mild symptoms should be treated for COVID-19 first, and then they can receive dental treatment.

Most patients agreed to undergo ATK testing before receiving dental treatment. As for the other respondents, they commented that COVID-19 testing was the right thing to do but that it may add complications for the patient. As a result, the patient may decide not to receive dental treatment. Expenses for the COVID-19 testing should be reimbursed. Or, in cases where the patient has to undergo ATK testing on a regular basis, the results can be used together while another comment said that patients should be tested at the dental office and that the tests should not be expensive. Alternatively, only patients who are at risk or have symptoms should be examined. Many participants stated that they don't trust ATK test results because they may give inaccurate results.

The last point about COVID-19 preventive measures in an endemic situation or pandemic is over. Most of them further commented that reducing measures to only necessary ones, such as ATK testing, should be canceled or that only testing people who are at risk. While some opinions say that measures should be continued for a while and then adjusted accordingly.

Table 3 Participants' opinions on dental services during the current and future pandemic periods

	Answer (%)		
	Agree	Disagree	Other
Patients with COVID-19 who have oral health problems or symptoms can receive dental treatment if the clinic or hospital has measures to prevent the spread of COVID-19	58.5	38.3	3.2
Patients should be tested for coronavirus such as ATK before receiving dental treatment	88.7	9.2	2.1
If the COVID-19 outbreak ends or becomes endemic, the dental clinic or hospital should continue COVID-19 preventive measures	90.3	7.3	2.4

#### 4.4 Statistic analysis

The comparison of concern levels between contracting COVID-19 from daily life and contracting COVID-19 from a dental visit, and between contracting COVID-19 from a dental visit and about oral health problems. If dental visits were interrupted due to the spread of a coronavirus, a Wilcoxon signed rank test would be used because the data did not have a normal distribution when Kolmogorov-Smirnov was used for the normality test.

**Tests of Normality**

	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Anxiety level about COVID-19 infection	.181	978	.000	.916	978	.000
Anxiety level about being infected with COVID-19 after visiting the dentist	.185	978	.000	.907	978	.000
Anxiety level about oral health problems If seeing the dentist is interrupted due to COVID-19	.187	978	.000	.901	978	.000

a. Lilliefors Significance Correction

The difference in concern level between contracting COVID-19 in everyday life (median = 3) and contracting COVID-19 during a dental visit (median = 3) was statistically significant at  $p < 0.000$ .

Ranks					Test Statistics <sup>a</sup>	
		N	Mean Rank	Sum of Ranks		
Anxiety level about being infected with COVID-19 after visiting the dentist -	Negative Ranks	216 <sup>a</sup>	270.95	58525.00	Anxiety level about being infected with COVID-19 after visiting the dentist - Anxiety level about COVID-19 infection	
	Positive Ranks	353 <sup>b</sup>	293.60	103640.00		
Anxiety level about COVID-19 infection	Ties	409 <sup>c</sup>				
	Total	978				
					Z	-5.998 <sup>b</sup>
					Asymp. Sig. (2-tailed)	.000

a. Anxiety level about being infected with COVID-19 after visiting the dentist < Anxiety level about COVID-19 infection

b. Anxiety level about being infected with COVID-19 after visiting the dentist > Anxiety level about COVID-19 infection

c. Anxiety level about being infected with COVID-19 after visiting the dentist = Anxiety level about COVID-19 infection

Test Statistics <sup>a</sup>	
Z	-5.998 <sup>b</sup>
Asymp. Sig. (2-tailed)	.000

a. Wilcoxon Signed Ranks Test  
b. Based on negative ranks.

The difference in concern level between contracting COVID-19 from a dental visit (median = 3) and about oral health problems if dental visits were interrupted due to the spread of coronavirus (median = 3) was statistically significant at  $p = 0.002$ .

Ranks					Test Statistics <sup>a</sup>	
		N	Mean Rank	Sum of Ranks		
Anxiety level about oral health problems if seeing the dentist is interrupted due to COVID-19 - Anxiety level about being infected with COVID-19 after visiting the dentist	Negative Ranks	236 <sup>a</sup>	252.95	59696.00	Anxiety level about oral health problems if seeing the dentist is interrupted due to COVID-19 - Anxiety level about being infected with COVID-19 after visiting the dentist	
	Positive Ranks	293 <sup>b</sup>	274.71	80489.00		
	Ties	449 <sup>c</sup>				
	Total	978				
					Z	-3.050 <sup>b</sup>
					Asymp. Sig. (2-tailed)	.002

a. Anxiety level about oral health problems if seeing the dentist is interrupted due to COVID-19 < Anxiety level about being infected with COVID-19 after visiting the dentist

b. Anxiety level about oral health problems if seeing the dentist is interrupted due to COVID-19 > Anxiety level about being infected with COVID-19 after visiting the dentist

c. Anxiety level about oral health problems if seeing the dentist is interrupted due to COVID-19 = Anxiety level about being infected with COVID-19 after visiting the dentist

Test Statistics <sup>a</sup>	
Z	-3.050 <sup>b</sup>
Asymp. Sig. (2-tailed)	.002

a. Wilcoxon Signed Ranks Test  
b. Based on negative ranks.

The association between demographic data and attitudes toward dentistry and the COVID-19 pandemic, as detailed in Table 4 and 5. Our study focused on four different types of attitudes described below.

1. The perception of the risk of contracting COVID-19 because of daily life.

Gender, age, underlying disease, healthcare worker, residence area (province), living with vulnerable family members, and experience of contracting COVID-19—both oneself and close people—were the factors that statistically significantly associated with this perception. Moreover, if we consider the mean and median of each factor, the participants who had these characteristics: female, age group 20–40, no underlying disease, being a healthcare worker, living in a provincial city, living with vulnerable family members, or having experience of contracting COVID-19—both oneself and close people—were more likely to have a perception that they are at risk of contracting COVID-19.

2. The level of concern about contracting COVID-19 from daily life in the past 6 months.

Gender, age, healthcare work, living with vulnerable family members, and having personal experience with close people contracting COVID-19 were the factors that statistically significantly associated with this matter. When mean and median values were considered, it was discovered that participants who were females, the age group 20-40, being a healthcare worker, living with vulnerable family members, or having experience of close people contracting COVID-19 from close were more likely to be concerned about contracting COVID-19 in the previous 6 months.

3. The level of concern about contracting COVID-19 from dental visit.

Gender, living with vulnerable family members, and income were the factors that statistically significantly associated with this matter. When mean and median values were considered, participants who were females, lived with vulnerable family members, or had incomes between 15,001 and 25,000 or >50,000 Baht were more likely to be concerned about contracting COVID-19 from a dental visit.



4. The level of concern about oral health problems if dental visits were interrupted due to the spread of Coronavirus.

Gender and education level were the factors that statistically significantly associated this matter. When mean and median values were considered, participants who were females or had an education level of at least a bachelor's degree were more likely to be concerned about oral health problems if dental visits were interrupted due to the spread of the coronavirus.



Table 4 The association between demographic data and attitude toward general COVID-19

Demographic data		The perception of the risk of contracting COVID-19 because of daily life	The level of concern about contracting COVID-19 from daily life in the past 6 months	
Gender	Sig.	P=0.008*	P<0.000*	
	Mean	Male	3.04	2.82
		Female	3.28	3.18
	Median	Male	3	3
Female		3	3	
Age	Sig.	P<0.000 *	P<0.000 *	
	Mean	20-40	3.5	3.23
		41-60	3.12	3.03
		>60	2.68	2.74
	Median	20-40	4	3
		41-60	3	3
>60		3	3	
Education level	Sig.	P=0.447	P=0.612	
	Mean	≤ Secondary	3.01	2.82
		Bachelor	3.3	3.12
		Master	3.09	3.02
	Median	≤ Secondary	3	3
		Bachelor	3	3
Master		3	3	
Underlying Disease	Sig.	P=0.004*	P=0.549	
	Mean	Yes	3.04	3.02
		No	3.26	3.07
	Median	Yes	3	3
No		3	3	
Healthcare worker	Sig.	P<0.000*	P=0.004*	
	Mean	Yes	3.77	3.23
		No	3.00	2.99
	Median	Yes	4	3
No		3	3	
Province	Sig.	P<0.000*	P=0.331	
	Mean	Capital city	3.05	3.02
		Provincial city	3.32	3.09
	Median	Capital city	3	3
Provincial city		3	3	

Living with family member	Sig.		P=0.126		P=0.614
	Mean	Yes	3.18		3.05
		No	3.34		3.11
	Median	Yes	3		3
		No	3		3
Living with vulnerable member	Sig.		P<0.000*		P<0.000*
	Mean	Yes	3.32		3.27
		No	3.03		2.82
	Median	Yes	3		3
		No	3		3
Experienced COVID-19 (Oneself)	Sig.		P=0.001*		P=0.337
	Mean	Yes	3.49		3.16
		No	3.13		3.03
	Median	Yes	3		3
		No	3		3
Experienced COVID-19 (Close people)	Sig.		P<0.000*		P<0.000*
	Mean	Yes	3.38		3.2
		No	2.82		2.77
	Median	Yes	3		3
		No	3		3
Income	Sig.		P=0.226		P=0.054
	Mean	<5,000	2.7		2.64
		5001-15,000	3.22		2.97
		15,001-25,000	3.36		3.13
		25,001-50,000	3.21		3.16
		>50,000	3.17		3.03
	Median	<5,000	3		3
		5001-15,000	3		3
		15,001-25,000	3		3
		25,001-50,000	3		3
		>50,000	3		3

Table 5 The association between demographic data and attitude toward COVID-19 and dentistry

Demographic data		The level of concern about contracting COVID-19 from dental visit	The level of concern about oral health problems if dental visits were interrupted due to the spread of coronavirus	
Gender	Sig.	P<0.000*	P=0.002*	
	Mean	Male	3	3.24
		Female	3.44	3.48
	Median	Male	3	3
		Female	4	4
Age	Sig.	P=0.237	P=0.088	
	Mean	20-40	3.23	3.48
		41-60	3.31	3.33
		>60	3.34	3.34
	Median	20-40	3	4
		41-60	3	3
		>60	3	3
Education level	Sig.	P=0.132	P=0.043*	
	Mean	≤ Secondary	2.99	3.04
		Bachelor	3.33	3.44
		Master	3.3	3.43
	Median	≤ Secondary	3	3
		Bachelor	3	4
Master		3	4	
Underlying Disease	Sig.	P=0.180	P=0.071	
	Mean	Yes	3.36	3.51
		No	3.25	3.35
	Median	Yes	3	4
No		3	3	
Healthcare worker	Sig.	P=0.797	P=0.108	
	Mean	Yes	3.3	3.29
		No	3.28	3.43
	Median	Yes	3	3
No		3	4	
Province	Sig.	P=0.155	P=0.853	
	Mean	Capital city	3.22	3.39
		Provincial city	3.33	3.40
	Median	Capital city	3	3
Provincial city		3	3	

Living with family member	Sig.		P=0.064	P=0.987
	Mean	Yes	3.31	3.40
		No	3.10	3.40
	Median	Yes	3	3
		No	3	3
Living with vulnerable member	Sig.		P=0.028*	P=0.600
	Mean	Yes	3.39	3.43
		No	3.22	3.37
	Median	Yes	3	3
		No	3	4
Experienced COVID-19 (Oneself)	Sig.		P=0.726	P=0.813
	Mean	Yes	3.23	3.36
		No	3.3	3.41
	Median	Yes	3	3
		No	3	3
Experienced COVID-19 (Close people)	Sig.		P=0.977	P=0.801
	Mean	Yes	3.3	3.43
		No	3.26	3.33
	Median	Yes	3	4
		No	3	3
Income	Sig.		P=0.04*	P=0.078
	Mean	<5,000	3.08	3.2
		5001-15,000	3.13	3.29
		15,001-25,000	3.35	3.37
		25,001-50,000	3.29	3.5
		>50,000	3.36	3.41
	Median	<5,000	3	3
		5001-15,000	3	3
		15,001-25,000	4	3
		25,001-50,000	3	4
		>50,000	4	3

The association between perceptions of COVID-19 preventive measures in dentistry and attitudes toward dentistry and the COVID-19 pandemic, as detailed in Table 6.

The perception of COVID-19 preventive measures in dentistry was not statistically significantly associated the level of concern about contracting COVID-19 from dental visit and the level of concern about oral health problems if dental visits were interrupted due to the spread of coronavirus.

Table 6

Patients' perceptions and attitudes toward COVID-19 preventive measures in dentistry			The level of concern about contracting COVID-19 from dental visit	The level of concern about oral health problems if dental visits were interrupted due to the spread of coronavirus
perception of COVID-19 preventive measures in dentistry	Sig.		P=0.433	P=0.458
	Mean	Yes	3.26	3.37
		No	3.32	3.43
	Median	Yes	3	3
		No	3	4

The association between knowledge and attitudes toward dentistry and the COVID-19 pandemic, as detailed in Table 7.

The knowledge of the participants in each statement statistically significantly associated the level of concern about contracting COVID-19 from a dental visit. When mean and median values were considered, participants who answered correctly tended to have higher levels of concern about contracting COVID-19 from a dental visit than those who answered incorrectly. However, mean and median values for the level of concern about oral health problems if dental visits were interrupted due to the spread of coronavirus in participants who answered correctly were higher, but there were some statements that significantly influenced the level of concern about oral health problems if dental visits were interrupted due to the spread of coronavirus.

Table 7.

Knowledge			The level of concern about contracting COVID-19 from dental visit	The level of concern about oral health problems if dental visits were interrupted due to the spread of coronavirus
COVID-19 can spread through breathing	Sig.		P=0.008*	P=0.029*
	Mean	Wrong	3.06	3.21
		Correct	3.33	3.43
	Median	Wrong	3	3
Correct		3	4	
COVID-19 can be transmitted through contaminated surfaces	Sig.		P<0.000*	P=0.04*
	Mean	Wrong	2.61	3.11
		Correct	3.33	3.42
	Median	Wrong	3	3
Correct		3	4	
The COVID-19 virus can be found in saliva	Sig.		P=0.004*	P=0.287
	Mean	Wrong	2.84	3.23
		Correct	3.31	3.41
	Median	Wrong	3	3
Correct		3	3	
COVID-19 can spread through droplets caused by dental treatment in infected patients	Sig.		P=0.001*	P=0.076
	Mean	Wrong	2.69	3.09
		Correct	3.31	3.41
	Median	Wrong	3	3
Correct		3	3	
Treatments like filling, scaling or surgically removing wisdom teeth can produce aerosols	Sig.		P<0.000*	P=0.008*
	Mean	Wrong	2.7	3.09
		Correct	3.34	3.43
	Median	Wrong	3	3
Correct		3	4	

The association between behavior and attitudes toward dentistry and the COVID-19 pandemic, as detailed in Table 8.

During the COVID-19 pandemic, participants' behavior was statistically significantly associated by their level of concern about contracting COVID-19 from a dental visit, as well as their level of concern about oral health problems if dental visits were interrupted due to the spread of coronavirus. The mean and median of concern levels in both topics were highest in the group of participants who brushed their teeth after meals, and concern levels decreased in the groups who brushed their teeth twice a day and brushed their teeth once a day or some days, respectively.

Table 8

Behavior		The level of concern about contracting COVID-19 from dental visit	The level of concern about oral health problems if dental visits were interrupted due to the spread of coronavirus
Brushing habit during COVID-19 pandemic	Sig.	P=0.007*	P=0.033*
	Mean		
	some day or once a day	2.65	2.91
	twice a day	3.28	3.41
	after meal	3.41	3.48
	Median		
	some day or once a day	3	3
	twice a day	3	3
	after meal	4	4
Frequency of receiving dental care during COVID-19 pandemic	Sig.	P=0.004*	P=0.084
	Mean		
	No	3.47	3.33
	symptoms	3.17	3.32
	symptoms	3.22	3.56
	twice a year	2.98	3.43
	more than twice a year	3.26	3.48
	Median		
	No	4	3
	symptoms	3	3
	symptoms	3	4
	twice a year	3	3
	more than twice a year	3	4



## Chapter V

### Discussion

This research was conducted during the Omicron epidemic era, and it's been a while since humans were involved in this pandemic. (42) According to the research, the average concern level for COVID-19 infection was moderate. Furthermore, the level of concern for the following issues arises if someone contracts COVID-19: The severity of symptoms or mortality, long COVID symptoms, access to COVID-19 treatment, the impact on study or work, and being a carrier were moderate. This may be because the Omicron strain is less virulent; there are vaccines and preventive measures, including being able to adapt to the new normal. (42) From the result, the level of concern about being a COVID-19 carrier was moderate, but the mean average of the concern level is highest when compared to other issues. Possibly due to COVID-19, which, if caught by the elderly or vulnerable groups, would have a high level of violence and a chance of death.(43) Furthermore, it was discovered in the study that having a vulnerable family member influences the fear of contracting COVID-19 from dental work as well.

In addition, the study found that the sex factor, especially concerns level in female, was significantly higher than males in all respects, which is consistent with many studies.(44) Females are more likely than males to look after dependent family members because they feel like the primary caretaker and since the pandemic is an additional stressor. (45) Moreover, the risk of developing anxiety disorders may be slightly higher in females due to differences in neurochemistry. (46)

Most participants in the study had accurate knowledge of the COVID-19 transmission route in dentistry, and it was discovered from analyzing the relation between knowledge and level of concern that those with incorrect knowledge were less concerned than those with correct knowledge about getting COVID-19 from dental visits. Insufficient knowledge may prevent the patient from being aware of the risk of

infection from the dental clinic; thus, it's important for the patient to realize and follow preventive measures for their own safety.(26)

The result from this study discovered that participants were more concerned about contracting COVID-19 from dental work than from daily life, as evidenced by a significant difference in mean concern levels from daily life (3.06) and from dental work (3.23) which is consistent with study of Sun et al. The study showed that most patients agreed that dental clinics were at high risk of viral infection (92%) and more dangerous than other public places (66%). (41)

The issue with which the patients were most concerned about being infected with COVID-19 from dental treatment was removing the mask while receiving treatment. When we consider patients' perceptions of COVID-19 preventive measures in dental clinics, we found that proper ventilation systems or air purification is one of the last three measures that participants could notice. This measure was directly related to the spread of COVID-19 because it was a contagious respiratory disease.(2) There was also a study that discovered SARS-CoV-2 RNA in the indoor air of dental clinics.(14) Therefore, dental clinics should pay more attention to this measure by improving their ventilation systems. The Thai ministry of public health has established a minimum of 12 ACH as the recommended standard for the environment in the dental clinic.(47) Air purifiers are highly recommended in dental healthcare facilities to help prevent the spread of infection, not only of COVID-19 but also other respiratory diseases. (14)

In addition, this study found that participants were more concerned about oral health problems if dental visits were interrupted due to the spread of coronavirus than contracting COVID-19 from dental work, as evidenced by a statistically significant difference in concern levels. Peloso et al. found that 49% of participants were concerned that untreated oral health problems would worsen and interfere with ongoing treatment, such as orthodontic treatment, which could cost more time and money.(21) According to our research, we found that most patients visited a dentist

during COVID-19 due to symptoms and got orthodontic treatment, with a higher proportion than prior to the COVID-19 epidemic. Meanwhile, fewer people visited for dental examinations, which was consistent with numerous studies. (20, 24, 27) However, a research by Moffat et al. in the early stages of COVID-19 found that patients thought that the risk of being infected with COVID-19 was more worrying than not getting the necessary dental treatment. (23)

Furthermore, the study found that the number of patients who did not receive dental treatment significantly increased from 8% in the pre-COVID-19 period to 36% during the COVID-19 outbreak. The patient had no symptoms, is afraid of COVID-19, and dental hospitals or clinics were closed, were the most common reasons. In our study, the group of participants who did not visit the dentist during COVID-19, there was a group of people who were very concerned about contracting COVID-19 from dental work, with the highest average concern level of 3.47. There was a study in Thailand that showed the group with oral problems that did not dare go to the dental service had higher levels of fear and anxiety than the group that would go to the dental service.(48) Additionally, it has been reported that fear of COVID-19 infection was significantly associated with avoiding dental visits. (49) The reason for the closure of the service facility or the provision of dental treatment only for urgent or emergency cases may be found in the early stages of the pandemic, as COVID-19 was an emerging disease. The dental service restriction may have reduced or prevented virus spread because dental treatment was an aerosol-generating.(18)

After the outbreak of COVID-19 for a while. There were some preventive measures in dentistry, the COVID-19 vaccine, or medication. Dental services began to operate more normally. This is consistent with our research findings. Most patients who visited the dentist during Omicron received normal dental care. Only a small percentage of patients were not treated because the procedure was an aerosol-generating procedure, or the case was not urgent or emergency-related. Among dental

facilities, the government hospitals had the highest percentage (18%) of patients who were not treated for this reason.

As for the point that patients would have confidence that they would receive safe dental care under the COVID-19 pandemic, they were very confident in the dental staff's strict compliance with COVID-19 preventive measures, with the highest level of confidence at a mean of 3.66 and median of 4. Similar to the Polish study, 83.6% of oral surgery patients reported feeling safe while they were at the dentist clinic and perceived dental professionals as having high levels of protection. (24) In addition, most patients in this study still expect measures to prevent COVID-19 in dentistry to continue even after the pandemic ends or becomes endemic.

Dental organizations should encourage people to attend more dental checkups and dental treatments to solve the problem of fewer patients receiving dental services due to the COVID-19 pandemic. Social networks such as Facebook and Line, which were popular in the current era, can be used to communicate with the general public. (50) Furthermore, it was necessary to encourage dental clinics or hospitals to strictly adhere to the COVID-19 prevention measures. Those measures or improved systems must be made available to the patients so that they can see or understand how improvements have been made, encouraging them to return with greater confidence to receive services.(23)

In addition, from this research, it was found that the number of patients who had better oral health care habits was higher than that of patients who had worse behavior during the COVID-19 pandemic. It may come from the fact that during some periods of the pandemic, people could not go out as usual or dental clinics were unavailable. Patients with better behavior may recognize that only preventive behaviors like tooth brushing can halt the development of oral diseases.(51, 52) Moreover, toothbrushing frequency was associated with the prevalence of oral problems that people experience.(53) According to a Brazilian study, adolescents brush their teeth less frequently. The reason for this could be that, due to routine changes

during the pandemic, particularly during the lockdown period, maintaining oral hygiene habits would worsen.(54) Therefore, it is important to promote oral health during this time (55) due to the preventable nature of dental disease. Early detection will save treatment costs and ensure that patients receive the greatest benefit (50)



## Chapter VI

### Conclusion

This study was carried out during the first six months of the Omicron variant's existence. The level of concern among patients about contracting COVID-19 was moderate. Most of the participants had accurate knowledge about the transmission route of COVID-19 in dentistry. Although most participants knew about COVID-19 preventive measures, this factor had no influence on the patients' attitudes about contracting COVID-19 from a dental visit, which were moderately concerned. Though patients' concern about contracting COVID-19 was moderate in both daily life and dental visits, the mean average of concern about contracting COVID-19 from dental visits was statistically significantly higher than that from daily life. Patients were also moderately concerned about oral health issues and when dental visits were disrupted due to the spread of the coronavirus. The number of people who did not visit the dentist increased dramatically. On the other hand, the number of patients who had a dental check-up was significantly reduced. Therefore, dental organizations should encourage patients to return for dental visits, promote oral health care behaviors, and strictly follow the COVID-19 preventive measures in dental clinics for people to have good oral health and receive safe dental treatment during the COVID-19 outbreak.

## Appendix

### Appendix 1

#### **Qualitative Interview about knowledge, attitude, behavior, and expectation of Thai patients toward dental treatment during COVID-19 pandemic**

##### **Objective:**

To investigate and understand in depth about Thai patient's knowledge, attitude, and behavior about dental treatment during COVID-19 pandemic in Thailand.

##### **Benefit of this study:**

1. The results of the present study could be applied through any private project or public policy to improve patient's knowledge and accurate understanding of infection control in dentistry during and beyond COVID-19 pandemic.
2. Saturated data yielded from this qualitative interview will be used as patient input for developing online questionnaire (quantitative study) to ensure relevance and comprehensiveness of its content in assessing the same aspect in Thai patients.

##### **Limitation:**

The ongoing COVID-19 pandemic situation and social distancing may restrict conventional face-to-face interview. The technology such as meeting online program Zoom (company, city, country), Line (company, city, country), Messenger (company, city, country) or phone call will be applied for this qualitative interview, thus participants who join in this study must have access and ability to use those technology.

##### **Material and method**

**Participants:** Adult Thai individuals who reside in Thailand during COVID-19 pandemic (January 2020 – present)

**Sample selection:** Purposive sampling will be used to select participants with different sociodemographic data. The sample will be divided into two groups:

1. Participants who received dental treatment during COVID-19 pandemic in Thailand.
2. Participants who didn't receive any dental treatment during COVID-19 pandemic in Thailand.

**Sample size:** 10-15 participants (until data is saturated)

**Ethical approval:**

Participants will be given verbal and written information about the study, when they accept to join the study, the consent must be returned before making the appointment for interview. This qualitative interview will be approved by the ethic committee in human research of the Faculty of Dentistry, Chulalongkorn University.

**Data collection:**

Data will be obtained through meeting online program (Zoom), Line, or Messenger application which researcher can virtually interview with the participants in September-October 2021. A semi-structures interview guide with open-ended questions will be developed and used. Each interview will take approximately 30-45 minutes and will be audio recorded.

The questions will be approved by experts and consist of sociodemographic data, attitude toward COVID-19 pandemic, knowledge attitude behavior and expectation about dental treatment during COVID-19 pandemic.

**Data analysis:**

Thematic analysis will be used to analyze the data following 6 steps which are familiarization, coding, generating themes, reviewing themes, defining, and naming themes and writing up.



## คู่มือสัมภาษณ์แบบกึ่งโครงสร้างพร้อมคำถามปลายเปิด

### คำถามเพื่อขอความยินยอมด้วยวาจา (Verbal consent) เพื่อเข้าร่วมงานวิจัย

“แบบสอบถามนี้เป็นงานวิจัยของคณะผู้วิจัยได้แก่ รศ.ทพญ.ดร.เกศกัญญา สัพพะเลข, อ.ทพ.ดร.ภาสวัชร วิริยกิจจา และ ทพญ.ปรีชาญ์ ปิงสุทธีวงศ์ คณะทันตแพทยศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย ชื่อโครงการวิจัย การสัมภาษณ์เชิงคุณภาพในประเด็น ความรู้ ทัศนคติ พฤติกรรม และความคาดหวังของคนไทยต่อการรักษาทางทันตกรรมในช่วงที่มีการระบาดของโรคโควิด 19 ซึ่งมีวัตถุประสงค์เพื่อศึกษาเกี่ยวกับ ความรู้ ทัศนคติ พฤติกรรม และความคาดหวังของคนไข้ไทยต่อการเข้ารับการรักษาทางทันตกรรม ในช่วงที่มีการระบาดของโรคโควิด 19 ท่านได้รับเชิญให้ตอบคำถามโดยการสัมภาษณ์ เนื่องจากท่านอาศัยอยู่ในประเทศไทยในช่วงที่มีการแพร่ระบาดของโรคโควิด 19 บทสัมภาษณ์นี้จะมีการบันทึกบทสนทนา โดยใช้เวลาประมาณ 30-45 นาที ในบทสนทนาจะไม่มีการระบุถึงชื่อ นามสกุล รวมถึงข้อมูลอื่นๆที่สามารถระบุตัวผู้ให้สัมภาษณ์ได้โดยตรง แต่ชื่อและนามสกุลรวมทั้งเบอร์โทรศัพท์ จะถูกบันทึกไว้ในไฟล์แยกต่างหาก ผู้ที่จะเข้าถึงข้อมูลนี้ได้ มีเฉพาะคณะผู้วิจัยเท่านั้น ท่านยินยอมที่จะเข้าร่วมโครงการนี้โดยสมัครใจมั๊ยคะ”

หากผู้เข้าร่วมงานวิจัยยินยอมหรือตกลงให้การสัมภาษณ์ จึงจะดำเนินการสัมภาษณ์ต่อไป

### 1. ข้อมูลทั่วไป

รหัส .....

(มีเอกสารที่บอกรายละเอียดของรหัส ชื่อ และเบอร์โทรศัพท์แยกอีกฉบับ)

รหัส	ชื่อ-สกุล	เบอร์โทรศัพท์	วันที่สัมภาษณ์

อายุ .....

น้ำหนัก ..... กก. ส่วนสูง ..... ซม.

โรคประจำตัว.....

ระดับการศึกษา .....

อาชีพ .....

ภูมิลำเนาอยู่จังหวัด .....

สถานที่ทำงาน/สถานศึกษา อยู่ที่เดียวกับภูมิลำเนาใช่หรือไม่  ใช่  ไม่ใช่ จังหวัด.....

จำนวนสมาชิกภายในบ้าน (รวมตัวท่าน)..... มีกลุ่มเสี่ยงอยู่ด้วยหรือไม่ (ผู้สูงอายุ ผู้ป่วยติดเตียง เด็กเล็ก)

สิทธิการรักษาทางทันตกรรม .....

รายได้เฉลี่ยต่อเดือน ก่อนมีการระบาดโควิด 19 .....

รายได้เฉลี่ยต่อเดือน ช่วงที่มีการระบาดโควิด 19 .....

## 2. คำถามปลายเปิด

### ผลกระทบต่อเศรษฐกิจในช่วงการระบาดของโควิด 19

- ในช่วงที่มีการระบาดของโควิด 19 รายรับเพียงพอกับรายจ่ายหรือไม่ เป็นอย่างไร
- รู้สึกว่าคุณภาพชีวิตเป็นอย่างไร ตั้งแต่มีการระบาดของโรควิด 19

### ผลกระทบต่อการใช้ชีวิตประจำวันและเรื่องสุขภาพในช่วงการระบาดของโควิด 19

- การติดต่อของโรควิด 19 สามารถติดต่อได้ทางไหนบ้าง และอย่างไร
- ท่านและคนใกล้ชิด มีประวัติการติดเชื้อโควิด หรือไม่ เป็นอย่างไร
- ท่านมีความคิดเห็นและความรู้สึกเกี่ยวกับการติดเชื้อ หรือโอกาสในการติดเชื้อโควิด 19 ของตัวท่านเอง เป็นอย่างไร
- ท่านมีประวัติการได้รับวัคซีน และมีความคิดเห็นต่อวัคซีนที่ได้รับในการป้องกันการติดเชื้อหรือลดความรุนแรงของอาการเป็นอย่างไร
- ท่านมีการปรับตัว หรือมีพฤติกรรมในการป้องกันการติดเชื้อโควิด 19 ทั้งการป้องกันตัวเองและคนใกล้ชิด อย่างไรบ้าง

### ผลกระทบต่อการใช้บริการรักษาทางทันตกรรมในช่วงการระบาดของโควิด 19

ก่อนการแพร่ระบาดของโรควิด 19 ท่านมีพฤติกรรมในการใช้บริการรักษาทางทันตกรรมเป็นอย่างไร

- ท่านมีปัญหาเกี่ยวกับสุขภาพช่องปาก หรือไม่ อย่างไร
- สาเหตุ และความถี่ในการเข้ารับการรักษา
- ท่านได้ใช้สิทธิการรักษาในการชำระค่ารักษาทางทันตกรรม หรือไม่ อย่างไร
- มีปัจจัยอะไรบ้างที่ส่งผลต่อการตัดสินใจในการเข้ารับการรักษาทางทันตกรรมของท่าน

(เช่น อาการ คลินิกทันตกรรม ทันตแพทย์ ค่ารักษา การเดินทาง)

*ในช่วงที่มีการแพร่ระบาดของโรคโควิด 19 ท่านมีพฤติกรรมในการเข้ารับการรักษาทางทันตกรรม เป็นอย่างไร*

- ท่านมีปัญหาเกี่ยวกับสุขภาพช่องปาก หรือไม่ อย่างไร
- สาเหตุ และความถี่ในการเข้ารับการรักษาทางทันตกรรม
- ท่านได้ใช้สิทธิการรักษาในการชำระค่ารักษาทางทันตกรรม หรือไม่ อย่างไร
- มีปัจจัยอะไรบ้างที่ส่งผลต่อการตัดสินใจในการเข้ารับการรักษาทางทันตกรรมของท่าน

(เช่น สถานการณ์การระบาด อาการ คลินิกทันตกรรม ทันตแพทย์ ค่ารักษา การเดินทาง)

*ท่านมีความรู้สึก หรือมีความคิดเห็นอย่างไรบ้าง ต่อการเข้ารับการรักษาทางทันตกรรมในช่วงที่มีการระบาดของโรคโควิด 19*

(เช่น ความกลัว และความกังวลในการติดเชื้อโควิด 19)

*ท่านเคยได้รับความรู้ ข่าวสาร หรือมาตรการต่างๆ ของการรักษาทางทันตกรรมในช่วงที่มีการระบาดของโรคโควิด 19 หรือไม่ เป็นอย่างไร*

*ท่านมีความคิดเห็นและความคาดหวังอย่างไรบ้างต่อประเด็นต่างๆ ดังต่อไปนี้*

ทั้งในระยะเวลา a) ในช่วงที่มีการระบาดหนัก (ม.ย.- ก.ย.64)

b) หลังพ้นการระบาดของโรคโควิด 19 ไปแล้ว

- การให้การรักษาทางทันตกรรม หรือคำแนะนำต่างๆ จากทันตบุคลากร
- มาตรการป้องกันการติดเชื้อของคลินิก
- ค่ารักษาทางทันตกรรมที่เก็บเพิ่มเติมในส่วนของการอุปกรณ์หรือวัสดุในการป้องกันการติดเชื้อโควิด
- ต่อการนัดหมายเพื่อรักษา หรือติดตามอาการ
- การใช้ Rapid Antigen Test Kit (ชุดตรวจเชื้อโควิด-19 แบบเร่งด่วน) ก่อนการทำฟัน และค่าใช้จ่ายที่เหมาะสมสำหรับการใช้ชุดตรวจนี้

*ท่านมีความคิดเห็นอย่างไรบ้างต่อสถานการณ์ต่างๆ ดังต่อไปนี้*

- ถ้าท่านมีอาการปวดฟัน ท่านจะสื่อสารให้ทันตแพทย์รู้ได้อย่างไร ว่ามีอาการอยู่ตำแหน่งไหนในช่องปาก (เช่น พุด ใช้นิ้วจิ้มไปยังฟันที่ปวด เป็นต้น) หรือในกรณีที่มีฟันปลอม ท่านจะเป็นคนถอดฟันปลอมก่อนเข้ารับตรวจด้วยตัวเองหรือไม่ และทำอย่างไรต่อ
- ถ้าท่านสงสัยว่าตัวเองจะติดเชื้อโควิด 19 หรือเป็นผู้สัมผัสเสี่ยงสูง (ยังไม่ได้รับการวินิจฉัยว่าเป็นโควิด 19) แต่มีอาการ/ปัญหาในช่องปากและฟัน หรือมีนัดการรักษาทางทันตกรรมอยู่แล้ว ท่านจะทำอย่างไร

- ถ้าท่านรู้ว่าตัวเองติดเชื้อโควิด-19 (ได้รับการวินิจฉัยว่าเป็นโควิด 19) หลังจากที่ได้มารับการรักษาทางทันตกรรมภายใน 7 วัน ท่านจะมีความคิดเห็น หรือทำอะไรต่อไป เช่น

- พิจารณาว่าตนเองไปสัมผัสผู้ติดเชื้อจากที่อื่นหรือไม่ก่อนที่จะคิดว่าติดจากคลินิก/การรักษาทางทันตกรรม
- สงสัยว่าคลินิกทันตกรรมเป็นอันดับแรก ว่าเป็นแหล่งแพร่เชื้อให้ตนเอง
- โทรแจ้งคลินิกทันตกรรม ว่าตัวเองติดเชื้อโควิด-19



## Appendix 2

## แบบสอบถามความรู้ ทักษะ ทักษะ พฤติกรรม และความคาดหวังของคนไข้ไทยต่อการรักษา

## ทางทันตกรรมในช่วงที่มีการระบาดของโรคโควิด 19: สำรวจทางออนไลน์

- ตั้งแต่มีการระบาดของโรคโควิด 19 ท่านอาศัยอยู่ในประเทศไทย ใช่หรือไม่  
 ใช่  ไม่ (ถ้าใช่ ถึงได้ทำแบบสอบถามต่อไป)
- ท่านเป็นทันตแพทย์ ใช่หรือไม่  
 ใช่  ไม่ (ถ้าใช่ ถึงได้ทำแบบสอบถามต่อไป)
- ท่านยินยอมเข้าร่วมงานวิจัย ใช่หรือไม่  
 ใช่  ไม่ (ถ้าใช่ ถึงได้ทำแบบสอบถามต่อไป)

## 1. ข้อมูลทั่วไป (demographic data)

- เพศ  หญิง  ชาย  ไม่ระบุ
- อายุ .....
- โรคประจำตัว  มี (มีให้เลือกตาม 7 กลุ่มโรคเรื้อรังที่เป็นความเสี่ยงโควิด)
  - โรคทางเดินหายใจเรื้อรัง ปอดอุดกั้น หอบหืด
  - โรคหัวใจและหลอดเลือด เช่น โรคความดันโลหิตสูง โรคหัวใจขาดเลือด
  - โรคไตวายเรื้อรัง
  - โรคหลอดเลือดสมอง (อัมพฤกษ์ อัมพาต)
  - โรคอ้วน [มีดัชนีมวลกาย หรือ BMI มากกว่า 30  
 คำนวณจาก น้ำหนัก (กก.) หารด้วยส่วนสูง (ม.)]
  - โรคเมรังที่อยูระหว่างรักษาด้วยเคมีบำบัด รังสีบำบัด และภูมิคุ้มกันบำบัด
  - เบาหวาน
  - อื่นๆ โปรดระบุ.....
- ไม่มี
- การศึกษาสูงสุด :  ไม่ได้เรียนหนังสือ  
 ต่ำกว่าปริญญาตรี/ปวช  
 ปริญญาตรี/ปวส.

สูงกว่าปริญญาตรี

- อาชีพของท่านอยู่ในสายงานสาธารณสุขหรือไม่  ใช่  ไม่ใช่
- ภูมิลำเนาอยู่จังหวัด .....
- มีคนพักอาศัยร่วมกับท่าน หรือไม่  ใช่  ไม่ใช่
  - มีคนในบ้านที่เป็นกลุ่มเสี่ยง ถ้าติดโควิดแล้วจะมีความรุนแรง หรือไม่ (ได้แก่ เด็กอายุน้อยกว่า 5 ปี / สมาชิกที่กำลังตั้งครรภ์ / ผู้ที่อายุมากกว่า 60 ปี / ผู้ป่วยติดเชื้อ / ผู้ป่วยที่อยู่ในกลุ่ม 7 โรคเรื้อรัง)  มี  ไม่มี
- ในช่วง 6 เดือนที่ผ่านมา ท่านมีรายได้เฉลี่ยต่อเดือนประมาณกี่บาท
  - ไม่เกิน 5,000 บาท
  - 5,001 - 15,000 บาท
  - 15,001 - 25,000 บาท
  - 25,001 - 50,000 บาท
  - มากกว่า 50,000 บาท
- ท่านติดตามข่าวสาร เกี่ยวกับโรคโควิด 19 ผ่านทางช่องทางใดมากที่สุด
  - โทรทัศน์  หนังสือพิมพ์  วิทยุ  เว็บไซต์กระทรวงสาธารณสุข  เพชบุ๊ก (Facebook)  ไลน์ (Line)  ทวิตเตอร์ (Twitter)  ยูทูบ (Youtube)
- ท่านได้รับการฉีดวัคซีนโควิดหรือไม่  ใช่  ไม่ใช่
  - จำนวนวัคซีนที่ได้รับ (เข็ม)  1  2  3  4 หรือมากกว่า
  - เหตุผลที่ท่านยังไม่ได้รับวัคซีน
    - คิดว่าตนเองมีความเสี่ยงต่ำที่จะติดเชื้อ เช่น ไม่ได้ออกจากบ้าน
    - มีปัญหาสุขภาพที่แพทย์ไม่แนะนำให้ฉีดวัคซีน
    - กังวลเรื่องผลข้างเคียง
- ท่านเคยติดโควิด หรือไม่  เคย  ไม่เคย
  - อาการของท่านตอนเป็นโควิด จัดอยู่ระดับใด (ถ้าเคยเป็นมากกว่า 1 ครั้ง ให้เลือกอาการครั้งที่รุนแรงสุด)
    - สีเขียว = ไม่มีอาการ หรือ มีอาการเล็กน้อย เช่น ไข้ ไอ น้ำมูก เจ็บคอ ไม่ได้กลืนเป็นต้น
    - สีเหลือง = มีอาการไม่รุนแรง แต่มีอาการเหนื่อยหอบ หายใจเร็ว

- สีแดง = หอบเหนื่อย หายใจลำบาก เอกซเรย์พบปอดอักเสบรุนแรง หรือมีภาวะปอดบวม
- ท่านมีคนใกล้ชิด เช่น สมาชิกในบ้าน หรือ เพื่อนร่วมงาน เคยติดโควิดหรือไม่
    - เคย  ไม่เคย
      - อาการของคนใกล้ชิดตอนเป็นโควิด จัดอยู่ระดับใด (ถ้ามีคนใกล้ชิดเป็นมากกว่า 1 คน ให้เลือกอาการที่รุนแรงสุด)
        - สีเขียว = ไม่มีอาการ หรือ มีอาการเล็กน้อย เช่น ไข้ ไอ น้ำมูก เจ็บคอ ไม่ได้กลิ่น เป็นต้น
        - สีเหลือง = อาการไม่รุนแรง แต่มีอาการเหนื่อยหอบ หายใจเร็ว
        - สีแดง = หอบเหนื่อย หายใจลำบาก เอกซเรย์พบปอดอักเสบรุนแรง หรือมีภาวะปอดบวม
        - เสียชีวิต
  - ท่านเคยได้รับข้อมูลเกี่ยวกับมาตรการในการป้องกันการแพร่กระจายเชื้อโควิดจากการทำฟันหรือไม่
    - เคย ได้รับข้อมูล
    - ไม่เคย ได้รับข้อมูล

## 2. ทักษะคติเกี่ยวกับโรคโควิด 19

- ท่านคิดว่าตัวเองมีความเสี่ยงติดโควิด จากการใช้ชีวิตประจำวัน ระดับใด
 

1	2	3	4	5
---	---	---	---	---
- ระดับความกังวลของท่านว่าจะติดโควิด จากการใช้ชีวิตประจำวัน ในช่วง 6 เดือนที่ผ่านมา
 

1	2	3	4	5
---	---	---	---	---
- ระดับความกังวลของท่านว่าจะติดโควิด หากรัฐบาลประกาศนโยบายลดหน้ากาอนามัย
 

1	2	3	4	5
---	---	---	---	---
- ระดับความกังวลของท่าน ในประเด็นดังต่อไปนี้ ถ้าหากท่านติดโควิด (1 คือ ไม่กังวลเลย - 5 คือ กังวลมากที่สุด )

### 5 ระดับ Likert Scale

- |             |
|-------------|
| 1 ไม่เลย    |
| 2 น้อย      |
| 3 ปานกลาง   |
| 4 มาก       |
| 5 มากที่สุด |

- มีอาการรุนแรงหรือโอกาสเสียชีวิต  
1      2      3      4      5
- อาการหลงเหลือหลังติดเชื้อโควิด หรือ ลองโควิด (Long COVID)  
1      2      3      4      5
- เป็นพาหะหรือเป็นคนนำเชื้อไปสู่บุคคลรอบข้าง  
1      2      3      4      5
- ผลกระทบต่อการทำงานหรือการเรียน  
1      2      3      4      5
- การเข้าถึงระบบการรักษา  
1      2      3      4      5
- ค่ารักษาพยาบาล  
1      2      3      4      5

### 3. ความรู้ ทักษะ ทักษะ พฤติกรรม และความคาดหวังเกี่ยวกับการรักษาทางทันตกรรม

#### ในช่วงการระบาดโควิด 19

##### 3.1 ความรู้

- เชื้อโควิด สามารถแพร่ผ่านทางหายใจได้ ใช่หรือไม่  
 ใช่       ไม่ใช่       ไม่แน่ใจ
- เชื้อโควิดสามารถแพร่กระจายผ่านทางละอองฝอย ที่เกิดจากการทำฟันในคนไข้ที่เป็นโควิดได้ ใช่หรือไม่  
 ใช่       ไม่ใช่       ไม่แน่ใจ
- เชื้อโควิดสามารถพบได้ในน้ำลาย ใช่หรือไม่  
 ใช่       ไม่ใช่       ไม่แน่ใจ
- เชื้อโควิดสามารถติดต่อผ่านการสัมผัสสิ่งต่างๆ ที่ปนเปื้อนเชื้ออยู่ได้ ใช่หรือไม่  
 ใช่       ไม่ใช่       ไม่แน่ใจ
- การอุดฟัน ขูดหินปูน หรือผ่าฟันคุดเป็นการรักษาที่ก่อให้เกิดละอองฝอยได้ ใช่หรือไม่  
 ใช่       ไม่ใช่       ไม่แน่ใจ



### 3.2 ทศนคติ

- ระดับความกังวลของท่านว่าจะติดเชื้อโควิด จากการไปทำฟัน
 

1	2	3	4	5
---	---	---	---	---
- ระดับความกังวลของท่านต่อปัญหาสุขภาพช่องปาก ถ้าหากท่านไม่ได้ไปทำฟัน เพราะการแพร่ระบาดของโรคโควิด
 

1	2	3	4	5
---	---	---	---	---
- ท่านคิดว่า ตนเองเสี่ยงต่อการติดเชื้อโควิดจากการทำฟัน ในประเด็นดังต่อไปนี้ ระดับใด ( 1 คือ ไม่มีความเสี่ยงเลย - 5 คือ มีความเสี่ยงมากที่สุด )
  - จากการนั่งรอก่อนเข้ารับการรักษา
 

1	2	3	4	5
---	---	---	---	---
  - จากเจ้าหน้าที่ (ทันตแพทย์ ผู้ช่วยทันตแพทย์ หรือ เจ้าหน้าที่อื่นๆ)
 

1	2	3	4	5
---	---	---	---	---
  - จากการถอดหน้ากากอนามัยขณะทำฟัน
 

1	2	3	4	5
---	---	---	---	---
  - จากเครื่องมือที่นำเข้ามาในปากของท่านขณะทำฟัน
 

1	2	3	4	5
---	---	---	---	---
  - จากการนั่งรอระหว่างเข้ารับการรักษา
 

1	2	3	4	5
---	---	---	---	---
- ระดับความมั่นใจของท่านว่าจะไม่ติดโควิดจากการทำฟัน ในประเด็นดังต่อไปนี้ ระดับใด ( 1 คือ ไม่มั่นใจเลย - 5 คือ มั่นใจมากที่สุด )
  - ถ้าท่านได้รับวัคซีนแล้ว
 

1	2	3	4	5
---	---	---	---	---
  - ทันตแพทย์และเจ้าหน้าที่ ได้รับการตรวจหาเชื้อโควิด ก่อนปฏิบัติงาน
 

1	2	3	4	5
---	---	---	---	---
  - คนไข้ได้รับการตรวจหาเชื้อโควิดก่อนทำฟัน
 

1	2	3	4	5
---	---	---	---	---

#### 5 ระดับ Likert Scale

- |             |
|-------------|
| 1 ไม่เลย    |
| 2 น้อย      |
| 3 ปานกลาง   |
| 4 มาก       |
| 5 มากที่สุด |

- ทันตแพทย์ และเจ้าหน้าที่ปฏิบัติตามมาตรการป้องกันการแพร่กระจายเชื้อโควิด  
อย่างเคร่งครัด

1            2            3            4            5

### 3.3 พฤติกรรม

พฤติกรรมเกี่ยวกับการรักษาทางทันตกรรมในช่วงก่อนและมีการแพร่ระบาดของโรคโควิด 19  
ก่อนโควิดระบาด คือ ก่อน เดือนมีนาคม 2563

ช่วงโควิดระบาด คือ ตั้งแต่ เดือนมีนาคม 2563 จนถึงปัจจุบัน

- ท่านมีพฤติกรรมในการแปรงฟัน รวมถึงการทำความสะอาดฟันปลอม เป็นอย่างไร
  - ก่อนโควิดระบาด
    - แปรงฟันเป็นบางวัน
    - แปรงฟันวันละ 1 ครั้ง
    - แปรงฟันวันละ 2 ครั้ง
    - แปรงฟันหลังอาหารทุกมื้อ
  - ช่วงโควิดระบาด
    - แปรงฟันเป็นบางวัน
    - แปรงฟันวันละ 1 ครั้ง
    - แปรงฟันวันละ 2 ครั้ง
    - แปรงฟันหลังอาหารทุกมื้อ
- ในช่วงก่อนการระบาดของโรคโควิด 19 ท่านเข้ารับการรักษาทางทันตกรรมบ่อยแค่ไหน
  - มากกว่า 2 ครั้ง/ปี
  - ปีละ 2 ครั้ง
  - ทุก 1 ปี
  - ปีละ 1 ครั้ง
  - ไม่แน่นอน ไปเมื่อมีอาการ
  - ไม่ไปทำฟันเลย → (โยงไปซื้อตั้งแต่มีการระบาดไม่เคยไปทำฟัน)
- ก่อนโควิดระบาด ท่านไปทำฟันที่ไหน (เลือกข้อที่ไปบ่อยที่สุดเพียงข้อเดียว)
  - โรงพยาบาลของรัฐ
  - โรงพยาบาลส่งเสริมสุขภาพตำบล (รพ.สต.) หรือสถานีนอนามัย

- ศูนย์บริการสาธารณสุข กทม.
- โรงพยาบาลเอกชน
- คลินิกทันตกรรมเอกชน
- คณะทันตแพทยศาสตร์
- หน่วยแพทย์เคลื่อนที่ที่มีทันตแพทย์มาบริการ
- อื่นๆ โปรดระบุ .....

○ ก่อนโควิดระบาด ท่านไปทำฟัน เพราะอะไร (เลือกข้อที่เป็นเหตุผลมากที่สุดเพียงข้อเดียว)

- ตรวจฟันประจำปี รวมถึงการอุดหินปูนและขัดทำความสะอาดฟัน
- จัดฟัน
- มีอาการ เช่น ปวดฟัน / เสียวฟัน, ฟันแตก / ฟันหัก, วัสดุอุดฟัน / ครอบฟัน หลุดหรือแตก, ฟันโยก, ฟันผุ, เหงือกอักเสบ, มีฟันคุด, เหงือกบวม แก้มบวม หรือ มีหนอง, ต้องการใส่ฟันปลอม / ฟันปลอมหัก เป็นต้น

● ช่วงโควิดระบาด ท่านไปทำฟันบ่อยแค่ไหน

- มากกว่า 2 ครั้ง/ปี
- ปีละ 2 ครั้ง
- ทุก 1 ปี
- ปีละ 1 ครั้ง
- ไม่แน่นอน ไปเมื่อมีอาการ
- ไม่ไปทำฟันเลย

○ ช่วงโควิดระบาด ท่านไปทำฟันที่ไหน (เลือกข้อที่ไปบ่อยที่สุดเพียงข้อเดียว)

- โรงพยาบาลของรัฐ
- โรงพยาบาลส่งเสริมสุขภาพตำบล (รพ.สต.) หรือสถานีนอนมัย
- ศูนย์บริการสาธารณสุข กทม.
- โรงพยาบาลเอกชน
- คลินิกทันตกรรมเอกชน
- คณะทันตแพทยศาสตร์

- หน่วยแพทย์เคลื่อนที่ที่มีทันตแพทย์มาบริการ
- อื่นๆ โปรดระบุ .....
- ช่วงโควิดระบาด ท่านไปทำฟัน เพราะอะไร (เลือกข้อที่เป็นเหตุผลมากที่สุดเพียงข้อเดียว)
- ตรวจฟันประจำปี รวมไปถึงการขูดหินปูนและขัดทำความสะอาดฟัน
- จัดฟัน
- มีอาการ เช่น ปวดฟัน / เสียวฟัน, ฟันแตก / ฟันหัก, วัสดุอุดฟัน / ครอบฟัน หลุดหรือแตก, ฟันโยก, ฟันผุ, เหงือกอักเสบ, มีฟันคุด, เหงือกบวม แก้มบวม หรือ มีหนอง, ต้องการใส่ฟันปลอม / ฟันปลอมหัก เป็นต้น
- ในช่วง 6 เดือนที่ผ่านมา ท่านได้ไปพบทันตแพทย์ หรือไม่
- ใช่  ไม่ใช่
- จากการที่ท่านได้ไปพบทันตแพทย์ ในช่วง 6 เดือนที่ผ่านมา ท่านได้รับการรักษาหรือไม่ อย่างไร
- ได้รับการรักษาตามปกติ
- ได้รับการตรวจ แต่ไม่ได้รับการรักษา เนื่องจากอาการไม่เร่งด่วน / ชุกเฉิน
- ได้รับการตรวจ แต่ไม่ได้รับการรักษา เนื่องจากเป็นการรักษาที่ทำให้เกิดการฟุ้งกระจาย
- ได้รับการตรวจ แต่ไม่ได้รับการรักษา เพราะเหตุผลอื่นๆ
- ท่านไม่ได้ไปทำฟัน เพราะเหตุใด (เลือกข้อที่เป็นเหตุผลมากที่สุด เพียงข้อเดียว)
- ไม่มีอาการ
- กลัวการทำฟัน
- กังวลที่จะติดโควิด จากการทำฟัน
- คลินิกหรือโรงพยาบาล ปิดรับการรักษา เพราะการแพร่ระบาดของโรคโควิด 19
- มีปัญหาทางการเงิน จึงส่งผลถึงเรื่องค่ารักษา
- การรับรู้เกี่ยวกับมาตรการป้องกันการแพร่กระจายเชื้อโควิด 19 จากการทำฟัน

คลินิกหรือโรงพยาบาลที่ท่านไปทำฟัน ในช่วงที่มีการระบาดของโรคโควิด 19 มีมาตรการใดบ้าง (เลือกได้หลายข้อ )

- ตรวจคัดกรอง เช่น ชักประวัติการติดเชื้อโควิด 19 / การสัมผัสใกล้ชิดผู้ที่เป็นโควิด 19 / การรับวัคซีน
- วัดอุณหภูมิ ก่อนเข้าคลินิก
- จัดพื้นที่นั่งรอรับการรักษา โดยเว้นระยะห่างระหว่างเก้าอี้ไม่น้อยกว่า 1 เมตร
- ทำความสะอาดพื้นหรือบริเวณที่มีการสัมผัสด้วยมือ เช่น มือจับประตู เก้าอี้ ปุ่มกดลิฟท์ ห้องน้ำ ด้วยน้ำยาทำความสะอาดที่เหมาะสมเป็นระยะๆ
- ให้ท่านทำความสะอาดมือด้วยแอลกอฮอล์ หรือ สบู่ ก่อนเข้ารับการรักษา
- อมน้ำยาบ้วนปากก่อนทำการรักษา
- ทันตแพทย์ล้างมือก่อนการรักษา
- ทันตแพทย์ล้างมือหลังการรักษา
- ทันตแพทย์และผู้ช่วยทันตแพทย์ใส่เสื้อกาวน์กันน้ำ
- ทันตแพทย์และผู้ช่วยทันตแพทย์ใส่เฟซชีลด์ (อุปกรณ์ป้องกันใบหน้า)
- ทันตแพทย์และผู้ช่วยทันตแพทย์ใส่หมวกคลุมผม
- ทันตแพทย์และผู้ช่วยทันตแพทย์ใส่ถุงมือ
- ทันตแพทย์และผู้ช่วยทันตแพทย์ใส่หน้ากากอนามัยชนิด N95
- คลินิกทันตกรรมมีระบบระบายอากาศที่เหมาะสม เช่น มีพัดลมดูดอากาศ มีเครื่องฟอกอากาศ
- มีการเช็ดทำความสะอาดเก้าอี้ทำฟัน หลังจากรักษาเสร็จในแต่ละเคส

### 3.4 ความคาดหวัง

จากการระบาดของเชื้อโควิด (โอมิครอน) ในปัจจุบัน ท่านเห็นด้วยหรือไม่กับข้อความ ดังต่อไปนี้

- ผู้ป่วยโควิด ที่มีอาการหรือปัญหาสุขภาพช่องปาก สามารถไปทำฟันได้ ถ้าคลินิกหรือโรงพยาบาลมีมาตรการป้องกันการแพร่กระจายเชื้อโควิด 19
  - เห็นด้วย
  - ไม่เห็นด้วย
- คนไข้ควรตรวจหาเชื้อโควิด เช่น เอทีเค (ATK) ก่อนการทำฟัน
  - เห็นด้วย

ไม่เห็นด้วย

- ถ้าการระบาดของโรคโควิด 19 จบลงหรือกลายเป็นโรคประจำถิ่น คลินิกทันตกรรมหรือโรงพยาบาล ควรใช้มาตรการป้องกันการแพร่กระจายเชื้อโควิด 19 ต่อไป

เห็นด้วย

ไม่เห็นด้วย

.....

โปรดกรอรายละเอียด เพื่อลุ้นรับรางวัลบัตรเติมน้ำมัน ปตท. มูลค่า 500 บาท

ข้อมูลของท่านจะถูกเก็บเป็นความลับ และมีเฉพาะคณะผู้วิจัยเท่านั้นที่จะเข้าถึงข้อมูลชุดนี้ได้

- ท่านยินยอมกรอกข้อมูลส่วนบุคคลเพื่อให้ผู้วิจัยติดต่อกลับ หากท่านเป็นผู้โชคดีจากการสุ่มรางวัล หรือไม่

ยินยอม

ไม่ยินยอม

○ ข้อมูลสำหรับติดต่อกลับ

■ ชื่อ-นามสกุล .....

■ เบอร์โทรศัพท์.....

จุฬาลงกรณ์มหาวิทยาลัย  
CHULALONGKORN UNIVERSITY

บรรณานุกรม



จุฬาลงกรณ์มหาวิทยาลัย  
**CHULALONGKORN UNIVERSITY**

1. Lai CC, Shih TP, Ko WC, Tang HJ, Hsueh PR. Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and coronavirus disease-2019 (COVID-19): The epidemic and the challenges. *Int J Antimicrob Agents*. 2020;55(3):105924.
2. Rahman HS, Aziz MS, Hussein RH, Othman HH, Salih Omer SH, Khalid ES, et al. The transmission modes and sources of COVID-19: A systematic review. *Int J Surg Open*. 2020;26:125-36.
3. Mishra SK, Tripathi T. One year update on the COVID-19 pandemic: Where are we now? *Acta Trop*. 2021;214:105778.
4. Ali I, Alharbi OML. COVID-19: Disease, management, treatment, and social impact. *Sci Total Environ*. 2020;728:138861.
5. Hossain MM, Tasnim S, Sultana A, Faizah F, Mazumder H, Zou L, et al. Epidemiology of mental health problems in COVID-19: a review. *F1000Res*. 2020;9:636.
6. Kolahchi Z, De Domenico M, Uddin LQ, Cauda V, Grossmann I, Lacasa L, et al. COVID-19 and Its Global Economic Impact. *Adv Exp Med Biol*. 2021;1318:825-37.
7. Ge ZY, Yang LM, Xia JJ, Fu XH, Zhang YZ. Possible aerosol transmission of COVID-19 and special precautions in dentistry. *J Zhejiang Univ Sci B*. 2020;21(5):361-8.
8. Ceron JJ, Lamy E, Martinez-Subiela S, Lopez-Jornet P, Capela ESF, Eckersall PD, et al. Use of Saliva for Diagnosis and Monitoring the SARS-CoV-2: A General Perspective. *J Clin Med*. 2020;9(5).
9. Chen L, Zhao J, Peng J, Li X, Deng X, Geng Z, et al. Detection of SARS-CoV-2 in saliva and characterization of oral symptoms in COVID-19 patients. *Cell Prolif*. 2020;53(12):e12923.
10. Sabino-Silva R, Jardim ACG, Siqueira WL. Coronavirus COVID-19 impacts to dentistry and potential salivary diagnosis. *Clin Oral Investig*. 2020;24(4):1619-21.
11. Shamsoddin E. Saliva: a diagnostic option and a transmission route for 2019-nCoV. *Evid Based Dent*. 2020;21(2):68-70.
12. Xu R, Cui B, Duan X, Zhang P, Zhou X, Yuan Q. Saliva: potential diagnostic value and transmission of 2019-nCoV. *Int J Oral Sci*. 2020;12(1):11.



13. van Doremalen N, Bushmaker T, Morris DH, Holbrook MG, Gamble A, Williamson BN, et al. Aerosol and Surface Stability of SARS-CoV-2 as Compared with SARS-CoV-1. *N Engl J Med*. 2020;382(16):1564-7.
14. Tzoutzas I, Karoussis I, Maltezou HC. Air Quality in Dental Care Facilities: Update to Current Management and Control Strategies Implementing New Technologies: A Comprehensive Review. *Vaccines (Basel)*. 2022;10(6).
15. Gao Z, Xu Y, Sun C, Wang X, Guo Y, Qiu S, et al. A systematic review of asymptomatic infections with COVID-19. *J Microbiol Immunol Infect*. 2021;54(1):12-6.
16. Lauer SA, Grantz KH, Bi Q, Jones FK, Zheng Q, Meredith HR, et al. The Incubation Period of Coronavirus Disease 2019 (COVID-19) From Publicly Reported Confirmed Cases: Estimation and Application. *Ann Intern Med*. 2020;172(9):577-82.
17. Cirrincione L, Plescia F, Ledda C, Rapisarda V, Martorana D, Moldovan RE, et al. COVID-19 Pandemic: Prevention and Protection Measures to Be Adopted at the Workplace. *Sustainability*. 2020;12(9):3603.
18. Guo J, Xie H, Wu H. Preventive Measures for COVID-19 in Dental Treatments. *Disaster Med Public Health Prep*. 2022;16(3):866-70.
19. Silva OMD, Cabral DB, Marin SM, Bitencourt J, Vargas MAO, Meschial WC. Biosafety measures to prevent COVID-19 in healthcare professionals: an integrative review. *Rev Bras Enferm*. 2021;75(1):e20201191.
20. Vergara-Buenaventura A, Chavez-Tuñon M, Castro-Ruiz C. The Mental Health Consequences of Coronavirus Disease 2019 Pandemic in Dentistry. *Disaster Med Public Health Prep*. 2020;14(6):e31-e4.
21. Peloso RM, Pini NIP, Sundfeld Neto D, Mori AA, Oliveira RCG, Valarelli FP, et al. How does the quarantine resulting from COVID-19 impact dental appointments and patient anxiety levels? *Braz Oral Res*. 2020;34:e84.
22. Aquilanti L, Gallegati S, Temperini V, Ferrante L, Skrami E, Procaccini M, et al. Italian Response to Coronavirus Pandemic in Dental Care Access: The DeCADE Study. *Int J Environ Res Public Health*. 2020;17(19).
23. Moffat RC, Yentes CT, Crookston BT, West JH. Patient Perceptions about Professional Dental Services during the COVID-19 Pandemic. *JDR Clin Trans Res*. 2021;6(1):15-23.

24. Pylińska-Dąbrowska D, Starzyńska A, Cubala WJ, Ragin K, Alterio D, Jereczek-Fossa BA. Psychological Functioning of Patients Undergoing Oral Surgery Procedures during the Regime Related with SARS-CoV-2 Pandemic. *J Clin Med*. 2020;9(10).
25. Farsi D, Farsi N. Mothers' Knowledge, Attitudes, and Fears About Dental Visits During the COVID-19 Pandemic: A Cross-sectional Study. *J Int Soc Prev Community Dent*. 2021;11(1):83-91.
26. Ahmed MA, Jouhar R, Adnan S, Ahmed N, Ghazal T, Adanir N. Evaluation of Patient's Knowledge, Attitude, and Practice of Cross-Infection Control in Dentistry during COVID-19 Pandemic. *Eur J Dent*. 2020;14(S 01):S1-s6.
27. Bains R, Tikku AP, Bains VK, Verma P. Knowledge, Attitudes, and Practices of Dental Patients Toward Cross-Infection and Economic Implications in View of Covid-19: An Online Survey. *Journal of Advanced Oral Research*. 2021;12(1):95-102.
28. Meo SA, Meo AS, Al-Jassir FF, Klonoff DC. Omicron SARS-CoV-2 new variant: global prevalence and biological and clinical characteristics. *Eur Rev Med Pharmacol Sci*. 2021;25(24):8012-8.
29. Li Wan Po A. Omicron variant as nature's solution to the COVID-19 pandemic. *J Clin Pharm Ther*. 2022;47(1):3-5.
30. Chams N, Chams S, Badran R, Shams A, Araji A, Raad M, et al. COVID-19: A Multidisciplinary Review. *Front Public Health*. 2020;8:383.
31. Khan M, Adil SF, Alkhathlan HZ, Tahir MN, Saif S, Khan M, et al. COVID-19: A Global Challenge with Old History, Epidemiology and Progress So Far. *Molecules*. 2020;26(1).
32. Wan S, Li M, Ye Z, Yang C, Cai Q, Duan S, et al. CT Manifestations and Clinical Characteristics of 1115 Patients with Coronavirus Disease 2019 (COVID-19): A Systematic Review and Meta-analysis. *Acad Radiol*. 2020;27(7):910-21.
33. Lechien JR, Chiesa-Estomba CM, De Siati DR, Horoi M, Le Bon SD, Rodriguez A, et al. Olfactory and gustatory dysfunctions as a clinical presentation of mild-to-moderate forms of the coronavirus disease (COVID-19): a multicenter European study. *Eur Arch Otorhinolaryngol*. 2020;277(8):2251-61.

34. Mao L, Jin H, Wang M, Hu Y, Chen S, He Q, et al. Neurologic Manifestations of Hospitalized Patients With Coronavirus Disease 2019 in Wuhan, China. *JAMA Neurol.* 2020;77(6):683-90.
35. Wu Z, McGoogan JM. Characteristics of and Important Lessons From the Coronavirus Disease 2019 (COVID-19) Outbreak in China: Summary of a Report of 72 314 Cases From the Chinese Center for Disease Control and Prevention. *Jama.* 2020;323(13):1239-42.
36. Chen T, Wu D, Chen H, Yan W, Yang D, Chen G, et al. Clinical characteristics of 113 deceased patients with coronavirus disease 2019: retrospective study. *Bmj.* 2020;368:m1091.
37. Hu B, Guo H, Zhou P, Shi ZL. Characteristics of SARS-CoV-2 and COVID-19. *Nat Rev Microbiol.* 2021;19(3):141-54.
38. Iwasaki S, Fujisawa S, Nakakubo S, Kamada K, Yamashita Y, Fukumoto T, et al. Comparison of SARS-CoV-2 detection in nasopharyngeal swab and saliva. *J Infect.* 2020;81(2):e145-e7.
39. 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):9.
40. Cleveland JL, Gray SK, Harte JA, Robison VA, Moorman AC, Gooch BF. Transmission of blood-borne pathogens in US dental health care settings: 2016 update. *J Am Dent Assoc.* 2016;147(9):729-38.
41. Sun J, Xu Y, Qu Q, Luo W. Knowledge of and attitudes toward COVID-19 among parents of child dental patients during the outbreak. *Braz Oral Res.* 2020;34:e066.
42. Singhal T. The Emergence of Omicron: Challenging Times Are Here Again! *Indian J Pediatr.* 2022;89(5):490-6.
43. Ahmad Malik J, Ahmed S, Shinde M, Almermesh MHS, Alghamdi S, Hussain A, et al. The Impact of COVID-19 On Comorbidities: A Review Of Recent Updates For Combating It. *Saudi J Biol Sci.* 2022;29(5):3586-99.
44. Saeed H, Eslami A, Nassif NT, Simpson AM, Lal S. Anxiety Linked to COVID-19: A Systematic Review Comparing Anxiety Rates in Different Populations. *International Journal of Environmental Research and Public Health.* 2022;19(4):2189.

45. Rodríguez-Rey R, Garrido-Hernansaiz H, Collado S. Psychological Impact and Associated Factors During the Initial Stage of the Coronavirus (COVID-19) Pandemic Among the General Population in Spain. *Front Psychol.* 2020;11:1540.
46. Fu W, Wang C, Zou L, Guo Y, Lu Z, Yan S, et al. Psychological health, sleep quality, and coping styles to stress facing the COVID-19 in Wuhan, China. *Translational Psychiatry.* 2020;10(1):225.
47. Annuaiphant P, Thumbuntu T, Gaewkhiew P, Ampornaramveth RS. Paradigm shift in infection control practices in dental clinics in response to COVID-19 among dental professionals in Thailand. *Front Oral Health.* 2022;3:979600.
48. Promchinnawong W, Jansawang S, Deeraksa S, Jitpreeda W, Thanakanjanaphakdee W. Perspectives on dental services of the patients in the pandemic of Corona Virus (COVID-19) Thakhantho District, Kalasin Province. *Thai Dental Nurse Journal.* 2021;32(1).
49. González-Olmo MJ, Delgado-Ramos B, Ortega-Martínez AR, Romero-Maroto M, Carrillo-Díaz M. Fear of COVID-19 in Madrid. Will patients avoid dental care? *Int Dent J.* 2022;72(1):76-82.
50. Brian Z, Weintraub JA. Oral Health and COVID-19: Increasing the Need for Prevention and Access. *Prev Chronic Dis.* 2020;17:E82.
51. Liu C, Zhang S, Zhang C, Tai B, Jiang H, Du M. The impact of coronavirus lockdown on oral healthcare and its associated issues of pre-schoolers in China: an online cross-sectional survey. *BMC Oral Health.* 2021;21(1):54.
52. Cărmămidă M, Dumitrache MA, Țâncu AMC, Ilici RR, Ilinca R, Sfeatcu R. Oral Habits during the Lockdown from the SARS-CoV-2 Pandemic in the Romanian Population. *Medicina (Kaunas).* 2022;58(3).
53. Dickson-Swift V, Kangutkar T, Knevel R, Down S. The impact of COVID-19 on individual oral health: a scoping review. *BMC Oral Health.* 2022;22(1):422.
54. Brondani B, Knorst JK, Tomazoni F, Cóstá MD, Vargas AW, Noronha TG, et al. Effect of the COVID-19 pandemic on behavioural and psychosocial factors related to oral health in adolescents: A cohort study. *Int J Paediatr Dent.* 2021;31(4):539-46.
55. Cruz-Fierro N, Borges-Yáñez A, Duarte PCT, Cordell GA, Rodriguez-Garcia A. COVID-19: the impact on oral health care. *Cien Saude Colet.* 2022;27(8):3005-12.

## ประวัติผู้เขียน

ชื่อ-สกุล	Paratcha Pingsuthiwong
วัน เดือน ปี เกิด	1 December 1992
สถานที่เกิด	Bangkok
วุฒิการศึกษา	Faculty of dentistry, Chulalongkorn University

