

การวิจัยเชิงคุณภาพเพื่อศึกษาประสบการณ์และผลกระทบด้านสุขภาพใน สาวจัดพื้นในช่วงการระบาดของโรคโควิด-19

กิตตินันท์ ศรีแสตนตอ* จุฑามาศ ไชยคง** นริศรา แก้วสอนดี*** สุทธิดา ทองเชิดชู****
ทิพากร พุ่มเนลา***** วรยุทธ นาคอ้าย*****

บทคัดย่อ

บทนำ: การระบาดของโรคโควิด-19 ส่งผลกระทบเฉพาะอย่างยิ่งในกลุ่มผู้จัดพื้นที่ต้องได้รับการรักษาอย่างต่อเนื่อง ทั้งนี้เพราเป็นกลุ่มที่มีความเสี่ยงต่อการรับและแพร่เชื้อสูงในช่วงสถานการณ์ระบาดจาก การทำหัตถการ

วัตถุประสงค์: เพื่อศึกษาประสบการณ์ของสาวจัดพื้นโดยมุ่งศึกษาผลกระทบที่เกิดขึ้นในสถานการณ์การแพร่ระบาดของเชื้อไวรัสโคโรนา 2019

วิธีการวิจัย: ผู้ให้ข้อมูลสำคัญในการศึกษาครั้งนี้คือสาวจัดพื้นแบบติดต่อ จำนวน 11 คน โดยเลือกตัวอย่างแบบเจาะจง เก็บข้อมูลโดยการสัมภาษณ์เชิงลึกจนข้อมูลมีความอิมตัว และวิเคราะห์ข้อมูลด้วย เทคนิคการจัดกลุ่มแก่นสาระ

ผลการวิจัย: ประสบการณ์และผลกระทบของสาวจัดพื้นสามารถสรุปได้ดังนี้ 1) ผลกระทบด้านสุขภาพพบว่าเกิดปัญหาสุขภาพช่องปาก ได้แก่ มีแผลในช่องปาก มีการเกะกะของคราบหินปูน ปัญหาการโยกของฟัน และฟันล้ม และมีความเครียดและความวิตกกังวลสีบเนื่องจากการไม่ได้รับการรักษาตามแผน 2) ผลกระทบด้านการเงินทำให้ไม่สามารถจุนเงื่อนครอบครัว และทำให้ความสัมพันธ์ระหว่างเพื่อนและครอบครัวลดลง และยังส่งผลกระทบต่อแผนการรักษาที่ไม่เป็นไปแนวทางที่กำหนดและต้องใช้เวลาในการรักษาและการจัดพื้นนานมากขึ้น

สรุป: การวางแผนชีวิตทั้งด้านการเยียวยาร่างกาย จิตใจ การจัดการเรื่องการออมทรัพย์ และการสนับสนุนสวัสดิการ อาจเป็นแนวทางหนึ่งของการแก้ไขปัญหาที่ส่งผลกระทบต่อแผนการรักษาของทันตแพทย์น้อยลง

คำสำคัญ: โควิด-19 สาวโรงงาน ผลกระทบด้านสุขภาพ การจัดพื้นแบบติดต่อ

* โรงพยาบาลส่งเสริมสุขภาพตำบลหนองกลางนา จังหวัดราชบุรี

** โรงพยาบาลส่งเสริมสุขภาพตำบลกระตีบ จังหวัดนครปฐม

*** โรงพยาบาลนายนายยาอาม ตำบลนายยาอาม จังหวัดจันทบุรี

**** โรงพยาบาลส่งเสริมสุขภาพตำบลบ้านเขาหิน อำเภอศรีราชา จังหวัดชลบุรี

***** วิทยาลัยการสาธารณสุขสิรินธร จังหวัดชลบุรี คณะสาธารณสุขศาสตร์และสหเวชศาสตร์ สถาบันพระบรมราชชนก
ผู้นิพนธ์ประสาน : วรยุทธ นาคอ้าย, E-mail: worayuth@scphc.ac.th

A qualitative study of experiences and health impacts from COVID-19 pandemic in females wearing orthodontic devices

Kittinan Srisantor* Juthamat Chaipong** Naritsara Kaewsondi*** Sutthida Tongchoedchoo****
Thipakorn Phumchalao***** Worayuth Nak-Ai*****

Abstract

Introduction: The COVID-19 pandemic has had a significant impact particularly on groups requiring continuous dental treatment or management. This is because they are at a higher risk of infection and transmission during dental procedures.

Objectives: To explore the experience of the health impacts of close-set braces in women and the impact on dentists' treatment plans during the COVID-19 pandemic.

Methodology: The study involves 11 key informants with tightly arranged braces, selected through purposive sampling. Data were collected through in-depth interviews until saturation was reached. Data analysis utilized content and thematic analysis techniques.

Results: The experiences on individuals health impacts among female wearing orthodontic devices be concluded into 2 aspects: 1) Health-related impacts, including oral health problems due to prolonged brace wear, such as mouth sores, plaque accumulation, tooth mobility, and tooth loss. Additionally, those affected experienced COVID-19-related symptoms and mental health issues, such as stress and anxiety, due to a lack of planned treatment. 2) Financial impacts emerged as a primary concern for individuals with braces, affecting their ability to support their families and diminishing relationships with friends and family during the pandemic. There was an impact on treatment plans, which revealed deviations from the planned treatment and extended treatment times.

Conclusions: Life planning encompassing physical and mental wellbeing, financial management, and welfare support may be a potential solution to address the challenges. This could significantly reduce the impact on dental treatment plans, providing dentists with more manageable scenarios.

Keywords: COVID-19, factory workers, health impact, orthodontic device

* Public Health Technical Officer Nong Klang Na Tambon Health Promoting Hospital, Ratchaburi Province

** Public Health Technical Officer Krateep Tambon Health Promotion Hospital, Nakhon Pathom Province

*** Public Health Technical Officer Nayaiam Hospital, Chanthaburi Province

**** Public Health Technical Officer Health Promotion Hospital Bankhaohin, Chonburi Province

***** Sirindhorn College of Public Health, Faculty of Public Health and Allied Health Science, PBRI.

Corresponding Author: Worayuth Nak-Ai, E-mail: worayuth@scphc.ac.th

Introduction

Coronavirus disease 2019 (COVID-19) is a contagious disease in severe acute respiratory syndrome and is a novel strain of coronavirus. The outbreak began in December 2019¹ and spread to countries in all regions throughout the world, constituting the worst crisis in decades². The World Health Organization has assessed the situation and observed the COVID-19 outbreak was spreading fast, resulting in fears. On January 30, 2020, the outbreak was declared a Public Health Emergency of International Concern, recommending all countries to conduct surveillance, prevention and control of the disease.

The government formulated public health policies to cope with and reduce the spread of COVID-19 through the emergency decree, "Stay at Home, Stop the Virus, for the Nation" on March 26th, 2020. A travel bans and curfew including closing department stores, public places and establishments at high risk of COVID-19 were enforced. The measures directly and indirectly affected people in all dimensions, including the economy, society, health and security in life while other issues resulted in the closure of establishments and industrial estates due to employment concerning implementing relevant measures. Especially in Chonburi with many tourist attractions, crowds formed in the province. Moreover, Chonburi is also an industrial estate area where people of working

age groups live in a dense proportion, causing the epidemic situation in Chonburi to increase in the number of people testing positive. Tourist attractions and industrial estates included with dental clinics had to close and shut down, resulting in unemployment, reduced employment among low-income workers and affected to loss follow up in females wearing orthodontic devices also³.

The COVID-19 outbreak directly affected the healthcare system and patients. The study by Cotrin et al.⁴ informed that the quarantine and coronavirus pandemic showed to have impact on orthodontic appointments and patients' anxiety. Patients willing to attend an orthodontic appointment presented significantly lower level of anxiety than patients that would not go or would go only in urgency/emergency. Females were more anxious than males about coronavirus pandemic, quarantine and impact on their orthodontic treatments. Delay in treatment was the greatest concern of patients undergoing orthodontic treatment. As for the case of oral and dental diseases, the risk of increasing severity of the disease due to delayed treatment including an infectious disease from the teeth, gingivitis, periodontitis, and dental caries could also be severe⁵. Dental professionals providing care have a high likelihood of coming into close contact with patients especially patient wearing orthodontic devices that has long time to treatment⁶⁻⁷. Dentists are exposed to

respiratory droplets which can impact the provision of dental services. This has led to concerns and anxiety among some patients who avoid seeking dental treatment, causing them to miss regular care. Additionally, there are financial losses incurred due to unemployment, which further prevents individuals from accessing dental clinics⁸.

Orthodontics is a form of “beauty” that is popular in today's society for both women and men and is more popular due to the advanced techniques in methods and science. Lagorsse and Gebeile-Chaut⁹ concluded that adolescent females were a relatively frequent group of orthodontic patients due to their aesthetic needs, leading to a greater need for orthodontic treatment than males¹⁰. The study preliminarily analyzed the service recipient database and interviewed dentists at a dental clinic in Chonburi, reporting that those receiving metal brace orthodontic services at the dental clinic during June 2022 were aged 24 to 34 years old. Most were female or 52% working in Amata Nakorn Industrial Estate, Chonburi. During the COVID-19 pandemic, most patients did not receive treatment nor continue the follow-up according to the disease control measurements.

The impact of the COVID-19 pandemic, although currently controllable, has multifaceted effects on the quality of life and oral health of individuals undergoing orthodontic treatment. Some individuals recovering from COVID-19 may experience long COVID, affecting both

physical and mental well-being⁴. Especially, in people who wearing orthodontic devices had impacted on orthodontic treatment, delays in orthodontic appointments and longer waiting times for treatment have been observed. While, accessing dental care during the pandemic may pose challenges, leading to increased oral health problems¹¹.

Moreover, females were more concerned than males about the pandemic, causing postponed appointments, resulting in delayed treatment in orthodontics. This was the biggest problem among patients experiencing orthodontics¹²⁻¹³. Due to this emerging disease and popular orthodontics, the researchers are interested in studying the health impacts, including direct, indirect and cumulative effects on females wearing metal bracket orthodontic devices working in industrial plants and the dentists' treatment plans during the COVID-19 epidemic at a dental clinic in Na Pa Subdistrict, Mueang District, Chonburi. Therefore, this study aimed to explored the experience and the health impacts on females who wore metal bracket orthodontic devices working in industrial plants during the COVID-19 pandemic.

Methodology

This research constitutes phenomenological qualitative research.

Study instruments

The instrument was the semi-structured interview created by the

researchers that covered the research problems, including personal information, and community context, reasons for orthodontics, impacts on physical, mental, social and economic dimensions during the COVID-19 outbreak, and the impact on the treatment and orthodontics to better understand the meaning of the concept and values of women with metal braces. The content validity was examined by two experts having experience in COVID-19 management to give some suggestion about the question that related to health and social impact. While, a dentist with experience in orthodontics who is not part of the study group suggested about the question for the treatment effect. The instrument which was adjusted accordingly based on feedback and the language used was checked before leading to building an understanding of qualitative research data collection in the research team.

A team of researchers concluded, reflected and asked key informants to provide additional information. The question guidelines were flexible and provided informants the opportunity to express or tell stories of life experiences and independent perspectives on illness. The research team used "Thai" as the main language to create a mutual understanding and friendliness between the researchers and the informants.

Key informants

Total, 11 key informants with purposive

sampling were women with metal brace orthodontic devices at a dental clinic in Na Pa Subdistrict, Mueang District, Chonburi and working in industrial plants in Amata Nakorn Industrial Estate. Who's experienced with orthodontic and working during December 2019 and the COVID-19 pandemic. The data were collected in August 2022.

Ethical considerations

This research's human research ethics has been certified by the Human Research Ethics Committee, Sirindhorn College of Public Health, Chonburi, according to the approval letter No. COA.NO 2022/S22 dated July 22, 2022.

Data collection

After the approval of Human Research Ethics Committee, the research team made an appointment with the volunteers through the dental clinic owner for an interview. After, the research team introduced themselves and clarified the objectives of the study with the consent of the volunteers. The data were collected by informal interview. All researchers were trained in qualitative research technique with interview and non-participate observation by advisor at Sirindhorn college of public health Chonburi, and practice again by using research interviewing guideline in comparable sample before study in field. Two researchers jointly asked for discussion, reviewed, reflected and examined the informants' understanding. Permission was requested to record audio during the discussion. The

researchers took 60 minutes to complete one interview. All interviews were conducted at appointment points, such as a coffee shop or a dental clinic to facilitate the convenience of informants and their relatives and to create a sense of privacy for the informants. Data collection is conducted through individual in-depth interview one time per case but in case of uncompleted information the researcher makes an interview again by mobile phone until comprehensive and rich data is obtained. In this study, the total of 11 key informants gave the data with saturation and richness for analysis.

Data analysis

The preliminary data were analyzed instantly during the interview to create follow-up or secondary questions during the conversation. The analysis after the interview was a discussion among the research team members, the volunteers and the dentist. Finally, the researcher transcribed the data obtained from the interviews for synthesis and interpretation, aiming to extract meaning based on the research objectives. Following Krueger's approach¹⁴, the researcher will consider similarities and differences in the data to organize and reduce unnecessary information. Subsequently, the researcher will interpret the data, attempting to derive meaning and identify connections among the presented information¹⁵. Through this interpretative process, the researcher can generate conclusions from observed phenomena

and find connections or relationships among the sub-conclusions.

Results

1) Background of Female Factory Workers and Orthodontics

As for interviews with 11 key informants, all migrated to work in Chonburi for different reasons. The decision to migrate caused changes in social roles from students or female farmers living in provincial areas to factory workers. The reasons for the transition to industrial can be divided in four reasons, namely, 1) seeking a job after graduation, 2) moving influenced by a lover, 3) moving to live with relatives and 4) moving influenced by higher earnings. In this transition, all had a similar purpose which was "finance" to obtain a job with a huge salary, but they had to exchange for sleep deprivation and living a hurried life to eat and go to the toilet. For some factories, they may have to stand all night to work to earn enough money for personal expenses, including orthodontics and monthly family expenses.

They offered two reasons they received orthodontics. (1) They had the inherent abnormality of the teeth, oral anatomy and facial structure, including problems with the abnormal alignment of teeth, overlapping teeth, crooked teeth and misaligned teeth which affected their lives. These were the main reasons for deciding to have metal braces "*I have a lot of problems with an overlapping*

lower tooth making it difficult to clean." (F2, August 23th, 2022) and (2) they wanted to enhance their confidence and to have satisfactions with their appearance. Therefore, orthodontics would help the teeth that are stacked to be beautifully realigned. It can impair oral health and enhance confidence in socializing. "When I smile, it's not pretty - I dare not smile and talk." (F1, August 21st, 2022)

2) The experience form COVID-19

The experience on health impacts during the COVID-19 outbreak depicted the relation of the impacts on the individual through direct, indirect impacts. Multiple impacts were observed. Female factory workers who wore orthodontic devices had impacts in terms of physical and mental illness; mouth ulcer, plaque accumulation, tooth mobility, and tooth loss and some long covid symptom such as dyspnea and cough. Social aspects, due to the lockdown measurement especially the regulation to social distancing and limitation of travel, affected to them relationship either her partner or their parent. Financial aspects; the decreased income affected directly to the them capacity for treatment pay, including their family economy as well. Such impacts were like a domino effect on their health, orthodontic plan, their family and social relationship.

Impacts also had a causal relation to the co-occurring factors. The pattern of such relation involved a "messy" connection or a complex systematic relationship. The health

impacts on women with metal braces during the COVID-19 outbreak were divided in two parts as described below.

2.1) Physical illness: there was a direct impact refers to the impact of the COVID-19 epidemic that directly causes problems for both physical and mental health. The mechanisms of COVID-19 deteriorated health. Even after being cured of the disease, health status was difficult to return to normal conditions. It also results in a mental state of fear and awkwardness to face the epidemic, including being quarantined and witnessing people dying from the disease. These have a deteriorating impact on their mental and physical health.

Physical Illness: For those testing positive, the most common symptoms included fever, cough, tasteless tongue, odorless nose and fatigue. After being cured, abnormal symptoms remained such as cough and dyspnea. To prevent infection, it became necessary to wear a mask every time. Especially the hot weather caused facial skin and oral health problems. While the limited time to go to the toilet at the factory, some female factory workers developed cystitis, causing unclean brushing and more tartar as well. as follows;

"I have to wear a mask all the time that causes acne." (F1, August 28th, 2022)

"I got COVID from my boyfriend. It's made me feel tired, panting and coughing all the time until today." (F9, September 12th, 2022)

The women with orthodontics need more oral health care and always to check up and treatment. Since in the pandemic, all dental clinic has closed, it affected to them lose follow up and miss appointment. Some of them had oral health problems such as mouth sores, plaque accumulation, bad breath, tooth mobility, and tooth loss as the mention;

“In the severity pandemic, the dental clinic was closed, I have ulcer in my mouth many time.” (F11, September 12th, 2022)

“I had a problem with bad breath and tooth mobility in the period of closed clinic.” (F7, September 5th, 2022)

- Mental Illness: Due to the COVID-19 outbreak with an increasing number of infections and deaths, everyone became afraid of the news and people around them. Owing to uncertain and severe events, a feeling of insecurity in life progressed and they still felt uncomfortable with the COVID-19 situation. To protect themselves they did not go out to meet friends or family members and didn't want to take off a mask in public, especially in the toilets in busy factories, causing inconvenience for oral cleaning. Moreover, when testing positive to COVID-19; they needed to be treated and quarantined for several days, resulting in boredom and inner agitation. *“I feel scared, and fear that it will not recover because many deaths were reported in the media” (F6, August 21st, 2022)*

“I feel worried. It's not just infection. But the income has decreased while expenses

have remained constant and even increased when it came to purchasing personal protective equipment. No need to ask if I have money to pay for orthodontic treatment in installments.” (F10, September 9th, 2022)

- Change treatment Plan: The COVID-19 epidemic caused many patients to fear receiving treatment due to contracting the disease from the dental clinic, including the tools or the dentist's equipment that were unclean, unsafe and unsterilized. People, affected by the epidemic, faced problems related to daily expenses, i.e., they had no money to follow up. The postponement of appointments was likely to affect the adjustment of the treatment plan. As a result, patients lost more money and time. Especially orthodontics requires a visit every 4 to 6 weeks; thus, missing the appointment may be more detrimental if orthodontic rubbers are not replaced as scheduled, causing deterioration. As a result, the tooth alignment would not advance according to the plan, causing the tooth to move, creating tooth gaps and not dissolving the root. Also, the patient would have difficulty chewing food and the body would deteriorate faster from the lack of vital nutrients.

“After the clinic opened, I didn't go to my appointment. Because the income is not enough to pay for treatment so the appointment was postponed. The dentist said my teeth were loose and likely to fall. The doctor had to change the material and delayed treatment. It

was a serious problem. (F1,6,9,10, September 9th, 2022)

Moreover, the oral health problems encountered by the woman with braces are as follows: dislodged brackets and wire poking gums that affected to increased risk of oral ulcers. The preventive measures and mask-wearing associated with the COVID-19 pandemic might make oral care more challenging and this situation can make it difficult to maintain regular oral hygiene practices. While, gum problems were the result of swelling and Inflammation: Lack of proper cleaning or challenges in maintaining oral hygiene may contribute to swollen and inflamed gums, bleeding during brushing which vigorous brushing due to the presence of braces may lead to bleeding gums and could be sign of Gingivitis and early stage of gum diseases. The combination of issues, including bleeding gums and increased risk of decay, could contribute to a higher risk of tooth loss as the mention;

“During that time, I had problems with rubber bands and a lot of bleeding. Regarding brushing my teeth incorrectly because I just recently had braces.” (F8,F9, September 12th, 2022)

22) Financial and social impact, there was indirect impact refers to the change of aspects affecting various health factors until they modify health. The changes from the COVID-19 outbreak that caused and impact on health, family members and the economy.

- Access to Public Health Services: The increasing number of people contracting COVID-19 resulted in a crisis of insufficient beds for patients. They could not figure out where they should go when they tested positive. During the first wave of the outbreak, female factory workers took medicine on their own with treatment according to folk wisdom, such as using herbs.

The government measure on the closure of services or workplaces causing people to gather or to remain at risk of spreading the disease, directly affected “women with orthodontic devices” through a lack of treatment according to the treatment plan. This caused a period of orthodontic treatment to be postponed or anxiety from going to the clinic and risking contracting COVID-19. As a result, the female factory workers avoided traveling to receive services according to the dentist's treatment plan as the mentions;

“I and my boyfriend were infected with Covid during the severe outbreak. Hospitals and field hospitals are full. Ultimately, I must preserve and take care of myself.” (F9, September 12th, 2022)

“When I was infected, I had to buy medicine to take myself. Especially, must find the Andrographis paniculata.” (F2, August 23th, 2022, F7, September 5th ,2022)

- Social Relations: The government measure on social distancing led to a factory policy that limited the number of people working and set measures and lifestyle in the factory

to ensure safety and reduce the risk of spread in the factory or from outside into the factory. strict regulations made the relationship of colleagues distant from each other due to and fear of contracting the disease. Social measures with social distancing and staying at home quarantine caused boredom and awkwardness and deteriorated relationships with family and colleagues. This resulted in difficulties in working under the epidemic situation as the mention;

“During the outbreak, relationships between my boyfriend, my friends have disappeared. Because my boyfriend works in another factory, he must follow the measures of his factory. Each side is afraid of each other.” (F4,F6 September 3rd, 2022)

- Financial Impact: Economy and income of the female factory workers have declined from decreased salaries and overtime pay, and some people were affected by the factory shut down and reduced staff, resulting in lower income. They had to use their savings. They cannot send money back home. They did not go to the doctor for appointments because the government measuring that purpose to stop the outbreak and moreover, they fear infection. Many people avoided treatment from government agencies to cover up illnesses that would affect jobs and money according to the factory's policy to force the patients testing positive to leave work.

Since the outbreak of COVID-19, factories have shifted employment contracts from full

time to day-to-day. Workers did not receive (enough) welfare. Overtime payment was also decreased. This reduced the income of the working age group, resulting in insufficient money. Due to regular follow up of metal brace orthodontic devices, they avoided dental services at the clinic. Appointment was postponed for 1 to 2 months, resulting in a lack of insurance. Some people may have had problems with their oral and dental health as the mentions;

“During that time Factories have limited workers and OT. Income has been cut in half. So, it affected the expenses in daily life. Home support and doctor's fees. (F1-11)

On the other hand, COVID-19 can have advantages in that female factory workers learned and adapted to the situation and social measures by finding ways to save money, “change themselves, travel less and save more money”. They needed to change their lifestyle, especially focusing on health, having time for themselves, taking care of themselves and being more cautious, “pay more attention to health and become a health coach.” (F2, August 23th, 2022)

Discussion

Impact from the COVID-19 Pandemic
Regarding direct impact with their physical illness, the COVID-19 epidemic directly caused problems for both physical and mental health. The effects of COVID-19 deteriorated health. Even after being cured of the disease, health

status was difficult to return to normal conditions. It also resulted in a mental state of fear and awkwardness to face the epidemic. This was consistent with the concept of health impact assessment¹⁶⁻¹⁷ for both positive and negative impacts on public health that may arise from one or more policies, projects or activities. From this study, apart from female factory workers, directly affected physically by COVID-19, a part of the impact was directly affected by the implementation of government, factory and clinical policies affecting the health of women with metal braces working in a factory to reduce the impact on health. Alternative were considered for receiving dental services for women with metal brace orthodontic devices working in industrial plants and adjusting the dentist's treatment plans in accordance with the epidemic to reduce the risk factors associated with the disease. Further, threats to the health of women with metal braces working in the factory included environmental, economic, social and behavioral factors, which caused physical, mental, social and spiritual health impacts.

The financial and social impact, the indirect impact was a result of increasing socio-economic changes including the outbreak of COVID-19. This was consistent with the Social Impact Assessment (SIA) as the impact of the project on the community of people living in SIA, including changes in societies, economy, culture and quality of life¹⁸. The findings revealed the impacts of the COVID-19

epidemic on female factory workers in terms of socio-economic impacts, resulting in the crisis of patients with COVID-19 and the need to stay at home. Due to COVID-19, the government has issued measures and the factory implemented measures to prohibit the removal of masks, talking while eating, keeping their distance and restricting people using the bathroom. This caused changes in the lives of people in the factory. The relationships with family members and colleagues worsened. Under the spread of COVID-19, state and clinical measures were used to control the disease to reduce the social impact. It was also used to consider options to receive dental treatments for women with metal brace orthodontic devices working in industrial plants and to adjust the dentist's treatment plans according to the epidemic, including minimizing the impact on female factory workers as much as possible. This agrees with research of Manlae et al.¹⁸ conducted a study on the impact and adaptation of people during the COVID-19 epidemic in Nakhon Si Thammarat. The results showed that the working age group was mostly affected by the economy, causing their incomes to drop. While in the United State, the COVID-19 pandemic had a broad and significant impact on patient care and financial aspects¹⁹.

Even though the Covid outbreak has subsided, but the orthodontist's psyche by the infection and the loss of a colleague

remains including the effects of unemployment. Impact of loss of income it also results in accumulated anxiety and stress in orthodontic women who must allocate enough money to complete the treatment as planned by the dentist. There was the accumulative impact refers to the impact from physical and mental impacts, including socio-economic conditions when faced with various problems, resulting in psychosis, paranoia or stress. It can result in both positive and negative outcomes. This was consistent with research by Cotrin et al.⁴ conducted a study on the impact of the COVID-19 pandemic on appointments and patients' anxiety about orthodontics. The results demonstrated that disease control measures and the spread of the coronavirus affected orthodontic appointments and patients' anxiety, and women were more concerned than men about the spread of the coronavirus¹¹.

Regarding the impact on the treatment plan, the COVID-19 epidemic caused many patients to fear receiving treatment due to contracting the disease from the dental clinic, including the tools or the dentist's equipment that were unclean, unsafe and unsterilized. People affected by the epidemic faced problems related to daily expenses. They had no money to see a dentist. The postponement of appointments was likely to affect the adjustment of the treatment plan. As a result, patients lost more money and time, followed by impacts on oral cavity problems. There was relating to the study of Bustati and

Rajeh.²⁰ reported that the COVID-19 pandemic has had a significant impact on orthodontic treatments. Almost every orthodontic patient had to stop attending their appointments, which put them in complicated situations and in fear of delayed treatment. Patients from a public clinic and patients with fixed appliances reported more problems than others. Moreover, Leela-adison²¹ found that during the COVID-19 outbreak since 2020, the number of patients receiving services in both Roi Et Hospital and the dental work group decreased due to the government's policy to prevent the spread by asking people to avoid traveling during that period. It may also be because patients still had concerns about the safety of coming to hospitals and some types of services that must be suspended.

Conclusions and Recommendations

The impact on social aspects or social relationships by specifying the number of workers, limiting the capacity of factories, and regulating the time spent in restrooms has positive effects on disease prevention and control. This leads to increased cleanliness and more widespread cleaning, especially in restrooms. Therefore, this measure can be adapted to reduce the risk of infection among factory workers. Moreover, it helps alleviate anxiety among workers when using restrooms. From the study, it was found that the impact on the treatment plan of dentists is the cost

incurred by women with braces who face problems due to unemployment and reduced income. The clinics' measures, such as installment payment plans and reduced expenses for patients treated at the clinic, lead to an increase in patients attending appointments. This contributes to the adherence to the treatment plan. Therefore, other clinics can adopt this installment payment plan to make it convenient for patients and ensure that dental treatment follows the established plan.

From this study, it is found that the impact affecting the treatment process for women with braces is financial problems. Therefore, it is advisable to conduct a study on the saving patterns and financial management of factory workers to cope with the health-related impacts in the situation of the disease spreading.

References

1. World Health Organization. Disease outbreak news: Covid-19 - China. [internet]. 2020 [cited 2022 Aug 6]; Available from: <https://www.who.int/emergencies/diseases-outbreak-news/item/2020-DON233>.
2. Sriwilai S, Thongsri R. The effects of the spread of COVID-19 pandemic on Thai tourism. Journal of Legal Entity Management and Local Innovation. 2021;7(8):405-16. (in Thai).
3. Nasueb S. Social and economy impact from COVID-19 pandemic in global and Thailand [Research report]. Nonthaburi: IHPP, Division of Non communicable Diseases; 2021. (in Thai).
4. Cotrin P, Peloso RM, Oliveira RC, de Oliveira RCG, Pini NIP, Valarelli FP, et al. Impact of coronavirus pandemic in appointments and anxiety/concerns of patients regarding orthodontic treatment. *Orthod Craniofac Res*. 2020;23(4):455-61. doi: 10.1111/ocr.12395.
5. Chaicharoen P. Concern about severe and widespread oral and dental problems when Covid-19 lasts for a long time. [internet]. 2020 [cited 2022 May 29]; Available from: <https://www.hfocus.org/content/2020/10/20/288>. (in Thai).
6. Amato A, Caggiano M, Amato M, Moccia G, Capunzo M, De Caro F. Infection control in dental practice during the COVID-19 pandemic. *Int J Environ Res Public Health*. 2020;17(13):4769. doi: 10.3390/ijerph17134769.
7. 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. doi: 10.1038/s41368-020-0075-9.
8. 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):80-8. (in Thai).
9. Lagorsse A, Gebeille-Chaut S. Does gender make a difference in orthodontics? A literature review. *Orthod Fr*. 2018;89(2):

157-68. doi: 10.1051/orthodfr/2018011.

10. Prueitworanan A. Normative and perceived needs for orthodontic treatment of the 12-14-year-old students in Amphoe Muang Chiang Mai and Amphoe Muang Uttaradit [master's thesis]. Chiang Mai: Chiang Mai University; 2001. (in Thai).

11. Department of Medical Services. Guidelines for the care and treatment of COVID-19. [internet]. 2022 [cited 2022 Sep 15]; Available from: <https://covid19.dms.go.th>. (in Thai).

12. 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. doi: 10.1186/s12903-022-02463-0.

13. Burgersdijk R, Truin GJ, Frankenmolen F, Kalsbeek H, van't Hof M, Mulder J. Malocclusion and orthodontic treatment need of 15-74-year-old Dutch adults. *Community Dent Oral Epidemiol.* 1991;19(2): 64-7. doi: 10.1111/j.1600-0528.1991.tb00111.x.

14. Krueger RA. Focus groups: a practical guide for applied research. 2nd ed. Thousand Oaks, CA: Sage Publications; 1988.

15. Ritchie J, Spencer L. Qualitative data analysis for applied policy research. In: Huberman AM, Miles MB, Editors. *The qualitative researcher's companion.* Thousand Oaks, CA: Sage Publications; 2002.

16. Karen L. Health impact assessment. *BMJ.* 2000;320(7246): 1395-8. doi: 10.1136/bmj.320.7246.1395.

17. World Health Organization. Health impact assessment toolkit for cities document 1 vision to action. [internet]. 2005 [cited 2022 Jun 4]; Available from: https://www.euro.who.int/__data/assets/pdf_file/0007/101500/HIA_Toolkit_1.pdf.

18. Manlae W, Prathum B, Kaew-On S, Chamnian K. Effects and adjustment of people during COVID-19 pandemic in Nakhon Si Thammarat. *Journal of MCU Nakhondhat.* 2021;8(11):327-40. (in Thai).

19. Motevasel H, Helms LR, Eckert GJ, Stewart KT, Albright DA. The impact of the COVID-19 pandemic on U.S. orthodontic practices in 2020. *Am J Orthod Dentofacial Orthop.* 2022;161(2):198-207. doi: 10.1016/j.ajodo.2020.11.040.

20. Bustati N, Rajeh N. The impact of COVID-19 pandemic on patients receiving orthodontic treatment: an online questionnaire cross-sectional study. *J World Fed Orthod.* 2020; 9(4):159-63. doi: 10.1016/j.ejwf.2020.10.003.

22. Leela-Adisorn N. Impact of Coronavirus Disease 2019 (COVID-19) epidemic on dental work. *Journal of Public Health.* 2021;30(3):404-10. (in Thai).