A Qualitative Study Regarding Messages of the COVID-19 Vaccine from Vaccinated Healthcare Providers and Healthy Adults

Shuji SANO

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Supervisor: Satomi SATO, Ph.D.

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Abstract

Background: Vaccination is believed to be effective against COVID-19 infections. To promote the vaccine, person-to-person communication from vaccinated people will play an important role. The objectives of this study are to identify what messages were shared by healthcare providers and healthy adults who had been vaccinated, and the relationship between these messages and their background. **Methods**: This study was conducted on an exploratory and prospective basis with individual interviews. The participants were healthcare providers and healthy adults who were recruited at a vaccination site in Chuo-City, Tokyo. The online interviews were conducted individually using a semi-structured interview. Based on the Health Belief Model (HBM), the participants were asked about their perspectives on vaccines and what they talked about after vaccination. The contents of the interviews were categorized into each item of the HBM and analyzed. **Results**: During the period of August to October 2021, five healthcare providers and seven healthy adults were enrolled in the study. One healthy adult could not be contacted resulting in a total of 11 participants interviewed. Results of the interviews showed that when talking with others about the vaccination, both the healthcare providers and the healthy adults mainly talked about side effects after the vaccination, and to ease the other persons' concerns, told them that there was no need to worry very much about side effects. Meanwhile, there were differences in the recommendations for vaccination between the two groups. The healthcare providers were strongly aware of the severity of COVID-19 infection and recommended vaccination to others as a useful measure to suppress becoming severely ill. On the other hand, the healthy adults recommended the vaccine with varying degree depending on their expectations and concerns about the vaccine and external factors such as living with a family member. In addition, they unconsciously confirmed through casual conversation whether or not others

had been vaccinated, and if unvaccinated, some people felt stressed about being implicitly coerced into vaccination. These perspectives were clarified based on the HBM. **Conclusion**: Both the healthcare providers and healthy adults shared similar messages to ease the vaccination concerns of others that side effects need not be scary. However, their vaccine recommendation level was varied, which may be influenced not only by expectations and concerns toward the vaccine, but also by external factors such as family members living together.

Keywords: COVID-19, Vaccination, Vaccine recommendation, Messages, Healthcare provider, Healthy Adult

List of Abbreviations

COVID-19	Coronavirus disease 2019
HCP	Healthcare Provider
HA	Healthy Adult
HBM	Health Belief Model
HLS-14	14-item Health Literacy Scale for Japanese adults

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1. INTRODUCTION

1.1. Background Information

The spread of the COVID-19 has threatened and changed our daily lives. In such a situation, vaccination plays an important role in infection control by promoting herd immunity [1]. The Japanese government has promoted COVID-19 vaccination for the entire population, and those who wish to be vaccinated can do so for free [2].

Currently, the mRNA vaccines developed by Pfizer (Comirnaty™ intramuscular injection), and Moderna (Spikevax™ intramuscular injection), and the adenovirus vector vaccine developed by AstraZeneca (Vaxzevria™ intramuscular injection) have been approved by the Ministry of Health, Labour and Welfare in Japan [2], and have been available for clinical use. However, some people may be hesitant or unwilling to receive the COVID-19 vaccine due to a lack of long-term data and concerns about the safety of the vaccine influenced by information being spread by mass media or social network services [3,4].

In order to promote the vaccination, the Japanese government has provided the public with information through websites and TV commercials to aid decision-making on whether to vaccinate based on a comprehensive consideration of risks and benefits [2]. The reliability of information sources is a very important aspect; information from the Internet may have been unreliable due to insufficient or incorrect information [5], and may have influenced some people to not trust the information from the government or media, particularly those hesitant to receive the COVID-19 vaccine [6]. On the other hand, a previous report explained that person-to-person communication may be more effective in influencing health behaviors [7]. In addition, information from family members and close friends are very trustworthy because of their strong relationship [6,8]. This can be explained by the interpersonal communication

theory. This theory is based on human relationships from which health behaviors emerge, thereby affecting a variety of health outcomes [9,10]. Therefore, person-to-person communication, especially among close persons, may have a high impact on health behaviors.

Based on this, our assumption is that person-to-person communication with those who had been vaccinated for COVID-19 was considered to have had a significant influence. If vaccinated people share positive messages with the unvaccinated, then vaccination could spread smoothly across the population. The effectiveness of the messaging by those who have been vaccinated is influenced by how strongly they recommend vaccination to others, and by their perceptions that led them to get vaccinated. These perceptions can be explained by the Health Belief Model (HBM), which was developed as a disease conceptual model leading to health behaviors and has seven components, Perceived Susceptibility, Perceived Severity, Perceived Threat, Perceived Benefits, Perceived Barriers, Self-Efficacy, and Cues to Action [11]. Recently. Several studies have reported the HBM-based analyses of factors influencing the decision-making to vaccinate against COVID-19 [12–14]. In addition, it is assumed that the degree of health literacy of the vaccinated person influences the nature of the messaging and vaccine recommendation to others [15]. However, few studies have reported on what messages were provided from vaccinated people based on their perspectives of the vaccination.

1.2. Objectives

In a qualitative study utilizing semi-structured interviews, our objectives were to understand the types of messages shared by healthcare providers and healthy adults receiving the COVID-19 vaccine to the unvaccinated people around them, and the relationship between the messages and the participant background, such as their perception and recommendation to

the vaccine. Additionally, we set out to assess the differences and similarities between the healthcare providers and the healthy adults through these individual semi-structure interviews.

2. METHODS

2.1. Participants

A total of 10 participants including 5 healthcare providers and 5 healthy adults were targeted for recruitment in this exploratory study. The number of participants in this study was set at 10 since a previous qualitative study on vaccine hesitancy reported that data saturation was reached at around this number [16]. Three rounds of recruitment were pursued between August 23 and October 22, 2021 at the Chuo-city (Tokyo) administered vaccination site located at St. Luke's Center for Clinical Academia, St. Luke's International University. Participation in this study was voluntary and written informed consents were obtained.

Prospective participants who met the following criteria were considered for this study: 1) have completed the second dose of the COVID-19 vaccine, 2) healthcare providers, physicians or nurses, who were responsible for vaccination, or apparently healthy adults aged 20 years or older who were from the general population, 3) ability to communicate in Japanese, and 4) ability to conduct interviews via Zoom® (Zoom Video Communications, Inc., San Jose, CA, USA.). Exclusion criteria including the following: 1) persons with whom it was considered difficult to communicate directly, 2) those who were considered to have insufficient ability to understand and judge the interview, and 3) those who were judged to be difficult to conduct the interview with. These were assessed by the researcher during the screening.

2.2. Procedure

To efficiently recruit participants while taking care not to disturb the operations of the vaccination site, the cooperation was obtained from the person in charge of the vaccination

site and the Chuo City Public Health Center, which leads the vaccination operations in Chuo City. For recruitment of the healthy adults who had received the vaccine, the outline of this study was provided verbally after their vaccination; only if they expressed interest, were the details of the study explained to them in an adjacent room. If they agreed to participate, they were asked to provide written informed consented and to answer a questionnaire. For the recruitment of healthcare providers, the outline of the study was explained verbally before the start of vaccination work, and the details of the study were given after their work. As with the healthy adult population, only those who agreed to participate were asked to sign a consent form and to answer the questionnaire.

To increase the participation rate of the study, the following actions were taken: 1) posters about this research were displayed at the entrance of the vaccination site with the approval of the St Luke's International University (Appendix, Figure 1, 2), 2) the room for ensuring a relaxed environment for the research briefing was set up near the vaccine reception desk (Appendix, Figure 3), 3) the identity of the researcher was displayed with a name tag to avoid distrust (Appendix, Figure 4), 4) the researcher did not wear a business suit or white coat to avoid making the participant feel nervous (Appendix, Figure 5), 5) for those who could not decide about participation at that time, an online registration form using Google Forms (Google, Inc., California, U.S.) was prepared and registration from candidates were accepted at a later date.

Since the researcher communicated with the participant directly, it was necessary to take measures to avoid infection when conducting the research. To prevent infection, the following measures were taken: 1) materials to be handed over were filed in advance to reduce contact through the materials, 2) individually wrapped ballpoint pens were provided to each participant for filling out the consent and the questionnaire, and 3) the time of the interviews were set for a later date and were conducted online using Zoom®.

After the participants were registered, the dates for the online interviews were set individually between August and November 2021. As the purpose of this research was to interview participants about their conversations with close persons after their vaccination, the online interview was scheduled to take place at least two weeks after the second vaccination. Also, since the content of the conversation might be forgotten over time, the participants were asked to keep a memo as a reminder. Before the date of the interview, each participant was reminded by e-mail about what would be asked in the interview and was requested to keep in mind any relevant conversation after the vaccination. Before starting the interview, the outline of the research and the protection of personal information were explained again. The interviews were recorded using the Zoom recording function. At the end of the interview, a 5,000 yen (≒$45) Amazon gift card or QUO card was provided.

To create verbatim transcriptions of the interviews, an AI automatic transcription, RIMO Voice (RIMO LCC., Tokyo, Japan), was used to transcribe the audio that was recorded on Zoom®. Afterward, the audio was confirmed to provide a quality check of the created verbatim transcription. Any typographical errors or omissions were corrected manually. Personally identifiable information was anonymized.

The study was approved by the Research Ethics Board of St. Luke's University, and given the approval number: 21-R076.

2.3. Questionnaire

After obtaining the participants' consent, the questionnaire was used to collect information on socio-demographic characteristics and measures of health literacy. The questionnaire composed the following items: name, gender, age, date of birth, number of cohabiters, educational background, employment status, current health conditions, history of

COVID-19 infection, the dates of the 1st and 2nd vaccinations, and the 14-item Health Literacy Scale for Japanese adults (HLS-14) [17]. The HLS-14 developed by Suka (2015) consists of three levels: "functional health literacy," "communicative health literacy," and "critical health literacy," and has been widely used to assess the health literacy of Japanese adults [18–20].

2.4. Interviews

Interviews were practiced with an academic supervisor and my medical colleague, beforehand to assess the appropriate interview time and the validity of the questioning items. The main interviews were conducted with each participant on different dates. Each interview took about 30-40 minutes and was recorded. A semi-structured interview consisting of 7 general, open-ended, neutral, and non-guided questions was prepared by the researcher and the supervisor to evaluate the knowledge, attitude, behavior, and perceptions related to COVID-19 or COVID-19 vaccine. The interviews were conducted by the researcher with keeping in mind the components of the HBM: Perceived Susceptibility, Perceived Severity, Perceived Threat, Perceived Benefits, Perceived Barriers, Perceived Self-Efficacy, and Cue to Action. The HBM is a useful model for decision-making on vaccination [21–23].

2.4.1. Semi-structured interview questions following the HBM:

1. What do you know about the COVID-19 and COVID-19 vaccines? (Perceived Susceptibility, Perceived Severity, Perceived Threat)
2. What were your expectations about receiving the COVID-19 vaccine? (Perceived Benefit)
3. What were your concerns about receiving the COVID-19 vaccine? (Perceived

Barrier)

4. Why did you decide to get the COVID-19 vaccine? (Cues to Action)
5. What is your opinion about whether to recommend the COVID-19 vaccine to unvaccinated people? (Vaccine Recommendation)
6. What did you talk about with your family, friends, and colleagues after you received the COVID-19 vaccine? (Messages after vaccination)
7. What is your general opinion about the COVID-19 vaccine?

2.5. Analysis

NVivo Qualitative Data Analysis Software Version 1.5.2 (QSR International, Massachusetts, U.S.) was used to analyze the qualitative data. The analysis procedure consists of the following steps: 1) Coding-identifying: in-vivo coding of comments relevant to the research in each interview; 2) Coding-sorting: sorting of duplicate comments in the code obtained in the first coding to create units; 3) Coding-condensation: enhancing the level of abstraction for units obtained in second coding; 4) Categorizing: creating categories by extracting from the third coding the content that matches HBM, vaccination recommendations, and the content that was talked about after vaccination; 5) Generalizing: generalizing multiple participant's perspectives and significance albeit single-person perspectives based on the categories assigned to each item of the HBM. In order to eliminate arbitrariness as much as possible, each time one interview was completed, the review and analysis were carefully repeated by the researcher and the supervisor. Review and analysis meetings were held weekly from April to December 2021.

3. RESULTS

3.1. Participants

Between August and October 2021, five healthcare providers who were engaged in vaccination and seven healthy adults who were vaccinated at the site were enrolled in the study (Figure 1). One of the healthy adults was not included due to scheduling difficulties and loss of contact. Individual interviews were conducted with a total of 11 participants, 5 with males and 6 with females (Table 1). Participant ages included two in their 20s, two in their 30s, five in their 40s, and two in their 50s. The mean period between the second vaccination and the interview was 114 days for health care providers and 21 days for healthy adults. Healthcare providers received the COVID-19 vaccine as a priority, therefore the mean period to interview was longer than with the healthy adults (Figure 2). The average time to conduct the interview was 35 minutes. The mean score of the HLS-14, a measure of health literacy, was 55.7±5.4 with no difference between healthcare providers (55.6±4.1) and the healthy adult population (55.7±6.1) (Table 1).

3.2. Perceptions, Cues to Action, Vaccine Recommendation, and Messages

The results of 11 interviews included 117,040 words in Japanese spoken across 383 minutes of total interview time. The analysis for the interviews was carefully conducted with the supervisor for about 10 hours. In total, 267 codes were identified among healthcare providers and 355 codes were identified among healthy adults, which were relevant to the purpose of the study (coding-identifying) (Table 2). By sorting the codes obtained from the coding-identifying step, 146 codes and 226 codes were identified (cording-sorting). By enhancing the level of abstraction for categorization, 94 codes and 140 codes were found,

193 respectively (coding-condensation), and by categorizing the codes matching the HBM, 59
194 categories and 68 categories were created, respectively (categorizing). Finally, the
195 generalizability of the categories was 26 and 27 in healthcare providers and healthy adults,
196 respectively (generalizing). The categories for vaccination recommendations were 3 and 6,
197 and the categories for messages after vaccination were 3 and 7 for healthcare providers and
198 healthy adults, respectively. Each category and main comments are listed in Table 3 and 4.
199 Also, summary of the results is indicated in Figure 3.
200
201 **3.2.1. Perceived susceptibility**
202 The healthcare providers were aware of the possibility that they might be infected with
203 COVID-19 at their hospital, even if they were not directly involved in the treatment because
204 the hospital where they worked treated COVID-19 infected patients. On the other hand, the
205 healthy adults began to be aware that they might also be infected when the number of
206 infections rapidly expanded in Tokyo (Figure 2) [24], or when they saw or heard that there
207 were infected people nearby. However, when there were no infected people in their
208 immediate vicinity, the sense of reality was weakened, leading them to think that they might
209 not be infected weakening their perceived susceptibility.
210
211 **3.2.2. Perceived Severity**
212 The healthcare providers realized that the severe cases of COVID-19 increased in their
213 daily practice and that most of the severe cases were unvaccinated patients. Furthermore,
214 even when discharged from the hospital, some patients still suffered from sequelae, and this
215 made them aware of the COVID-19 threat.
216 In addition, some participants realized that not getting vaccinated may affect their
217 interpersonal relationships; for example, by wearing a mask when meeting unvaccinated

people. The healthy adult #12 has had similar experiences about relationships with others and realized that the conversation atmosphere deteriorated when she mentioned to others that she had no intention to vaccinate. The healthy adults were concerned that not vaccinating may lead to discrimination and prejudice. On the other hand, the healthy adult #8 commented that since there were more people infected with the COVID-19 in Tokyo than in rural areas, she did not face discrimination or prejudice from others even when she was infected. It is possible that whether the number of infected people is high or low in the surrounding area may influence the tendencies for discrimination and prejudice.

3.2.3. Perceived threat

Both the healthcare providers and the healthy adults were threatened by their own infection with the COVID-19 which could lead to secondary infection of those around them. In particular, those who lived with their families were more aware of the need for vaccination to protect family members.

3.2.4. Perceived benefits

The perceived benefit was similar for both the healthcare providers and the healthy adults. They hope that vaccination will suppress the transmission of the COVID-19 and reduce the risk of getting severely ill if infected. At the time of the interviews, the number of infected and severe cases in Tokyo were decreasing, making them realize the effect of the vaccine because the vaccination had gradually spread (Figure 2) [25]. They expected to be able to have dinner with friends, travel, and return to their hometowns, if the number of infected and severe cases continued to remain low. Such expectations were clarified by the interviews.

3.2.5. Perceived barriers

Many comments were received related to the perceived barriers, both from the healthcare providers and the healthy adults. The most common perception was concern about side effects from the vaccination. People generally imaged the vaccines to resemble influenza vaccines, and were not aware that influenza vaccination can cause side reactions. However, since the CIOVID-19 vaccine has a higher rate of side effects than conventional vaccines [26], they realized that it was completely different experience. They felt even more anxious before their vaccination after hearing about the painful side effects from the vaccinated people.

Also, the COVID-19 vaccines were a novel type with a different development process than the conventional ones, and people felt anxious about the novelty itself. Because of the lack of sufficient long term clinical data, they were concerned about unexpected side effects and sequelae in the future. As it was a novel type of vaccine, there was a lot of uncertain information on social networking sites and the Internet, such as "the COVID-19 vaccine will lead to infertility" and "the COVID-19 vaccine will affect immunity and eventually cause death". These questionable information had led to a sense of barrier to vaccination.

The unique perception of the healthy adults was that they recognized that Spikevax™ causes more side effects than Comirnaty™. While the healthcare providers did not have the option to vaccinate other than Comirnaty™, the healthy adults could choose amongst Comirnaty™, Spikevax™, or Vaxzevria™, causing a sense of barrier due to the difference in safety between the vaccines.

Employment status was also thought to have an impact on the sense of barrier to the vaccination. Since many young people, in particular, were non-regular workers [27], they were concerned about the influence of side effects of the vaccine on their work. Since there was no compensation for their salary if they missed work due to side effects, they were

worried about decreased income. Health adult #12 had heard such opinions from her close persons.

Furthermore, healthcare providers' vaccination schedule was set by the hospital where they work, so they did not need to make their reservations for vaccination. However, the healthy adults can decide to get vaccinated at their own timing. Therefore, some healthy adults were aware that they did not need to be vaccinated immediately. This could be a factor that enhances the sense of barrier. On the other hand, the majority of the participants felt that side effects after vaccination were mild and not as painful as they had expected, and this was not a barrier to recommending vaccination to others.

The participants recognized the importance of providing correct information, as they sometimes saw or heard ambiguous information. The healthcare providers were aware from their vaccination work that many people had concerns about vaccines, and believed that it was necessary to have a point of contact for these people to feel free to talk about various concerns and worries about the COVID-19 vaccines.

3.2.6. Self-efficacy

The healthcare providers had made the decision to vaccinate because of their sense of responsibility. As healthcare providers, they tried to give correct information to their family and friends, as they were often asked about vaccinations. To enhance self-efficacy, they believed it is important to know about the COVID-19 vaccines first.

Both the healthcare providers and the healthy adults found that their concerns before vaccination were alleviated by talking with others who had been vaccinated, and they felt more secure after vaccination. On the other hand, those who did not originally intend to be vaccinated did not have a high sense of self-efficacy even after receiving the vaccine.

3.2.7. Cues to Action

Both the healthcare providers and the healthy adults were motivated to get vaccinated by recommendations from specialists of infection disease and physicians, and by the fact that the people around them had also been vaccinated.

Even though they were not forced to be vaccinated, they felt the atmosphere in their workplace that they should be vaccinated. The ease of making reservations for vaccination was also a trigger for vaccination, as the healthy adults had to make their own reservations.

3.2.8. Vaccine recommendation to others

The healthcare providers were very eager to have as many people as possible vaccinated. As the COVID-19 vaccines were the most promising way to reduce the risk of getting severe infection, and realizing how devastating it can be, they believed that vaccines have more benefits than risks.

On the other hand, recommendations from the healthy adults for vaccination of others were varied. Some recommended vaccination to close family members, but did not actively recommend vaccination to others. This is because they recognize that not getting the vaccine is an option and should not be forced. Therefore, they would like to respect the unvaccinated people’s opinions. Differences in vaccine recommendations were found between the healthcare providers and the healthy adults.

3.2.9. Messages

Both the healthcare providers and the healthy adults often talked about side effects with their family, friends, and colleagues after vaccination. However, they did not try to stir up concerns, but rather told others that based on their own experiences the vaccination did not need to be scary and that they felt relieved after the vaccination. This was because the

participants in this study did not experience any strong side effects from the vaccination, and that the vaccination reduced the risk of infection and becoming severely ill from the COVID-19, as well as the risk of transmission to others.

A feature of the healthy adults was that they unconsciously checked the other person's vaccination status during the conversation. The vaccination status was a common topic of conversation in the COVID-19 era, and people naturally shared their vaccination experiences. This shared experience eased the fear of the COVID-19 vaccine for those who had not been vaccinated. By contrast, those who had no intention to be vaccinated felt stressed by having their vaccination status checked and by being implicitly recommended or pressured to be vaccinated.

4. DISCUSSION

This study was the first to understand what messages were shared by the vaccinated healthcare providers and healthy adults after their vaccination, and the relation of the individual's thoughts and social background in influencing the messages. Both the healthcare providers and healthy adults shared similar messages from their own vaccination experiences to ease others' concerns about side effects. However, differences in vaccine recommendations were observed between the healthcare providers and the healthy adults. The mean score of the HLS-14 did not differ between the two groups. Therefore, it was not clear whether health literacy affected the contents regarding what they talked about after vaccination. We described here the backgrounds and relationships that influence vaccine recommendations in both the healthcare providers and the healthy adults.

4.1. Vaccine recommendations from the healthcare providers

The healthcare providers who participated in this interview were unanimous in their recommendation for vaccination. The strongest reason for this is that they expect that vaccination will prevent getting severely ill even if infected with COVID-19. In their daily clinical practice, the healthcare providers have treated patients suffering from different kinds of diseases and have seen patients with significant functional disabilities, severe diseases, and die from diseases. Therefore, it was believed that they were treating patients with a strong motive to keep them from becoming severely ill and reduce deaths caused by diseases as much as possible. According to the perceived severity, we found that the healthcare providers strongly recognized the severity of COVID-19, such as the fact that unvaccinated patients with COVID-19 infection could become severely ill, the sequelae of COVID-19 infection could persist, and the sense that the number of the severe cases was increasing. Vaccination

has been recognized as a useful measure to reduce the risk of getting severely ill. The reason why they recommend vaccination was not only because of its advantage, but also because of the downside of not being vaccinated which would change the hospital's acceptance of an infected patient who becomes severely ill. Of course, they were concerned about side effects of the vaccine and the lack of long-term clinical data. However, based on the current data and their experiences and those of their colleagues, few serious side effects occurred, and they believed that the benefits of vaccination outweigh the risks at this point in time.

The interviews also clarified that the healthcare providers felt strongly about their responsibility. In the initial phase of the vaccination in Japan, when the experience of COVID-19 vaccination was still minimal, their sense of responsibility as healthcare providers promoted vaccination. Since the vaccination of the general population started, they have recognized that many people felt insecure about the vaccine. To alleviate their concerns, the healthcare providers tried as much as possible to provide correct information to those who wanted to be vaccinated at the vaccination sites, but there may have been some people who were hesitant to ask. For these people, setting up a point of contact where they can feel free to talk about the COVID-19 vaccines may alleviate their concerns. This was because the healthcare providers had experienced that to be informed about the vaccine made them feel at ease during vaccination.

In the conversation with their close persons after the vaccination, healthcare providers mainly talked about side effects based on their own experiences, but they also emphasized that there was no need to be afraid of side effects. This was because many people were worried about side effects of the vaccines, so they were trying to alleviate the concerns by explaining that side effects were milder than they had expected. In addition, they told the others that the vaccination gave them a sense of security because it reduced the risk of getting severe illness even if infected with the COVID-19.

4.2. Vaccine recommendations from the healthy adults

The level of vaccine recommendations from the healthy adults was inconsistent. While some healthy adults were willing to recommend vaccination to close family members, others were not actively recommending it to others. This may be affected by how much expectation they had for the vaccine in advance. Those who recommended vaccination were more likely to have been living with family members, and as a perceived threat, they were worried about transmitting COVID-19 to others if they had been infected. The recommendation to vaccinate might have been based on their desire to protect the family. In contrast, those who responded that they would not actively recommend the vaccine did not live with their families, but were considering getting the vaccine when the number of infected people significantly increases in Tokyo (Figure 2). This tendency was observed among younger people who, besides being concerned about side effects from the vaccine, were also concerned about the fact that it was a novel type of vaccine. In the case of non-regular employees, they were worried about not receiving compensation if they had to take a leave due to side effects of the vaccine, which suggests that their expectations of the vaccine were relatively low. Not only the expectation and insecurity toward the vaccine, but also environmental factors such as living with family members and employment status may affect the level of recommendation after vaccination.

Furthermore, what was unique about the healthy adults was their perception of the differences in vaccines and the timing of vaccination. Since only Comirnaty™ vaccines were given to healthcare providers, there were few comments about vaccine differences in the interviews, but the healthy adults were able to choose Spikebax™ and Vaxzebriar™ in addition to Comirnaty™, so there were conversations with others about vaccine differences. The participants in this study were aware that Spikebax™ causes more severe side effects than Comirnaty™. In addition, unlike healthcare providers, the healthy adults did not have a

fixed date for vaccination in advance and needed to make their own reservations for vaccination. Therefore, they had a relatively long period of time to make a decision about vaccination, and they could make their decision after observing the vaccination status and side effects of other vaccinated people around them. These external factors were probably influencing the vaccination decisions of the healthy adults.

In conversations after vaccination, the healthy adults mainly talked about side effects, based on their own experiences, to close persons and people who were worried about getting vaccinated, but told them that there was no need to worry. The message itself is the same for the healthcare providers and the healthy adults. A feature of conversations among the healthy adults was that they unintentionally checked each other's vaccination status during the conversation. This may be indicating an unconscious interest in recognizing the risk of infection that affects them. If the other person in the conversation was unvaccinated, they might refrain from future contact or hope that the other person would be vaccinated as well. On the other hand, unvaccinated people would feel that being checked about their vaccination status or being recommended for vaccination itself was vaccine-related harassment. This point should be taken into consideration when recommending vaccination.

4.3. Suggestions for practice

Lastly, the suggestions for practice in order to further promote vaccination are discussed from a public health perspective. Removing the concerns about the vaccine may lead to vaccination, which in turn may influence vaccine recommendations to others. In the interviews, it was found that anxiety about vaccines can be alleviated by sharing the experience of vaccination, that some unvaccinated people are not able to ask about their vaccine anxiety even if they want to, and that some people are reluctant to get vaccinated because they are concerned about their income loss due to side effects. To address these

issues, we suggest the following measures into the practice.

4.3.1. Share the experience with people close to you after vaccination

It has been reported that information from healthcare providers and people close to the target patients have more influence on health behavior than information from the media or the Internet [7]. And those who were hesitant to get vaccinated but did get vaccinated trusted information from healthcare providers and people close to them, such as family members [6]. By sharing the experience after vaccination, the other person who hears about it can gain a sense of security. By making their vague concerns concrete, those who are vaccinated may be able to ease the distrust that unvaccinated people may have towards the vaccines.

However, in sharing experiences, we need to be careful in our conversations to avoid unconsciously checking the other person's vaccination status and implicitly coercing them into vaccination. This is because people who have decided not to vaccinate feel stressed by having their status checked and being implicitly coerced to get vaccinated.

4.3.2. Set up a point of contact at vaccination sites where people can feel free to ask about vaccines

People who have been vaccinated, those who are planning to be vaccinated, and those who have no intention to be vaccinated have concerns. They are concerned about the safety of vaccines, including the long-term effects, the fact that each vaccine causes different side effects, and the risk of infection or becoming severely ill if they are not vaccinated. First of all, knowing exactly what the vaccine is may relieve some of their concerns, and talking about it can give them a sense of security. If they are still feeling insecure toward vaccination, positive messages will not be shared after vaccination. Eliminating concerns before vaccination is important in the dissemination of messages after vaccination.

4.3.3. Compensation for non-regular employees

In Japan, the proportion of non-regular employees is high, especially among women and young people [27]. Household income has been reported to be a factor in vaccine hesitancy [28]. Non-regular employees are concerned not only about side effects of the vaccine, but also about the possible loss of income due to the difficulty of working as a result of side effects. They have limited paid holidays compared with regular employees, and leave due to side effects may be counted as absenteeism. Therefore, if non-regular employees are vaccinated and have to be absent at work due to side effects, compensating them financially could help promote vaccination.

4.4. Limitations

There were several possible limitations in this study. At the vaccination sites in Chuo City, only residents of the Chuo City were eligible for vaccination. The characteristics of the participants include a high percentage of those with a university or graduate school education and a high level of health literacy. According to the national census in Japan [29], the national average of those with a university or graduate school education was 19.9%, while the participants in this study was 66.7%. The mean HLS-14 score in the national survey conducted by Suga (2013) was 50.3[17], while that of the participants in this study was 55.7, suggesting the possibility of selection bias and a higher level of health awareness than people in general. Therefore, most participants may have had the thought of recommending vaccination.

Furthermore, since only Comirnaty™ was provided at the vaccination site in this study, comments from people who had taken other vaccines were not available. Although the side effects reported for each vaccine were different, the incidence rate of side effects did not

differ significantly for any COVID-19 vaccines, so the influence on the results of this study was considered to be minimal [26].

Elderly people and those under 20 years of age were not enrolled in this study. Enrollment in the study did not begin until August 2021, and many elderly people had already been vaccinated, so it was difficult to recruit them. Those under 20 years of age were also excluded because of the possible influence of their parents on their vaccination decisions [30,31]. If elderly people or young people participate in this study, it may affect the results of the vaccine recommendation and the messages. Further studies may be needed for these populations and the unvaccinated people.

4.5. Conclusions

In this study, the messages from the conversations between the participants and those around them after vaccination were examined, as well as the relationship between the messages and the individual's thoughts and social background based on the HBM. Both the healthcare providers and healthy adults shared similar messages to ease the vaccination concerns of others regarding side effects. However, their vaccine recommendation level was varied, which may be influenced not only by expectations and concerns toward the vaccine, but also by external factors such as family members living together.

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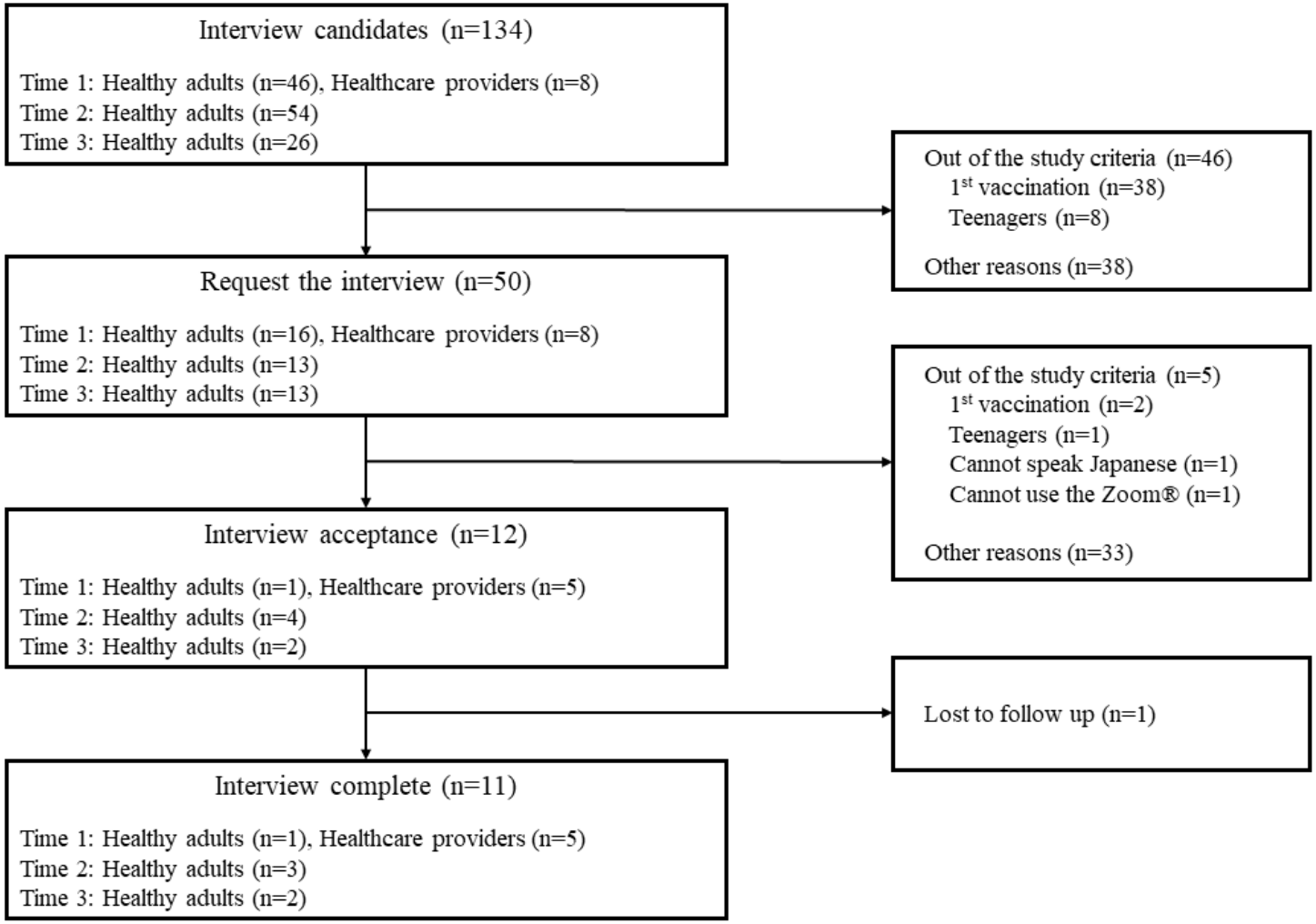

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584 Figure 1. Flow chart of participant recruitment

585 Table 1. Characteristics of participants

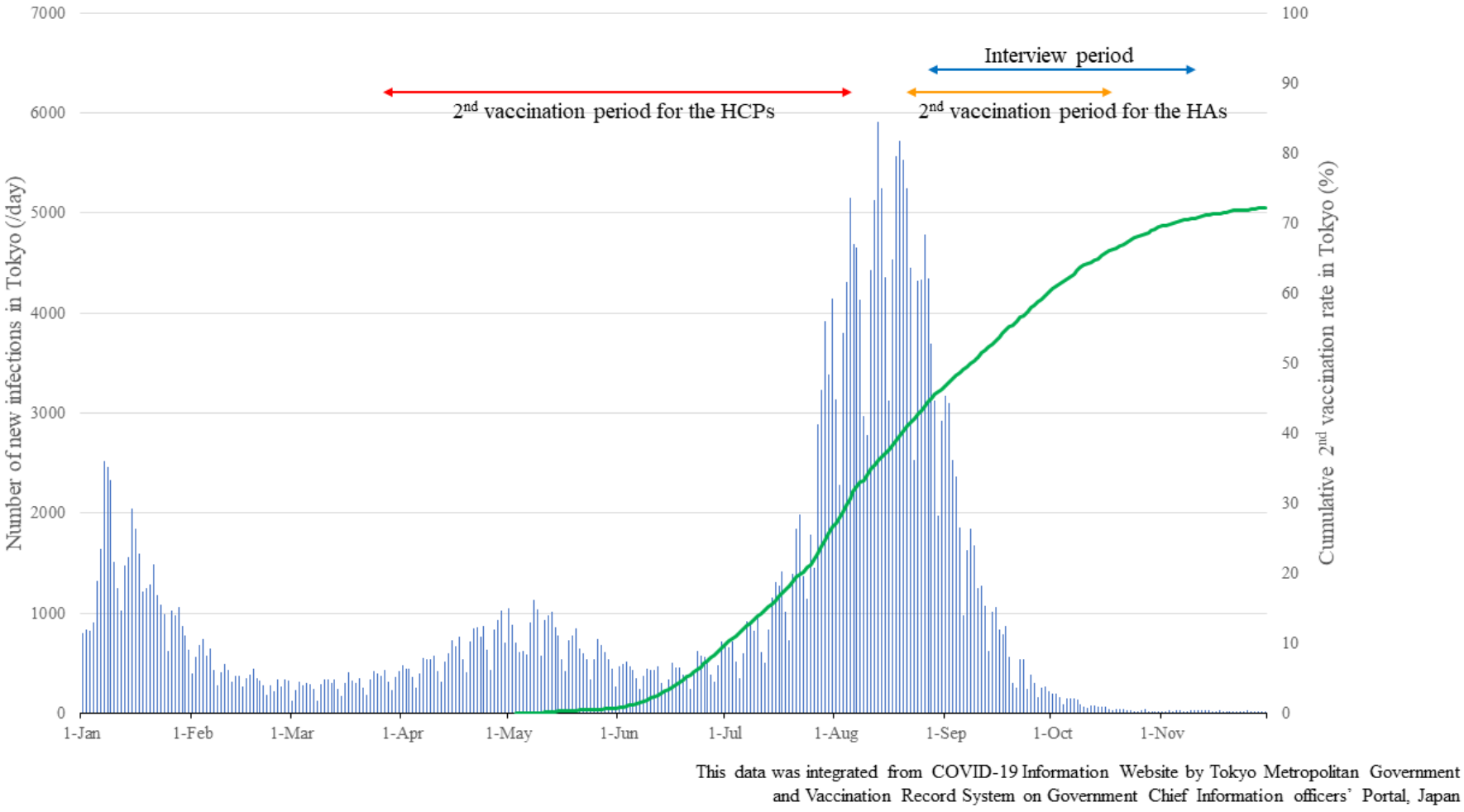
No	Sex	Age('s)	HCP or HA	Number of Family Members Living with	Education	Employment Status	Infection history of COVID-19
1	Male	30	Physician	2	University	Full time	No
2	Male	40	Physician	≧3	Graduate school	Full time	No
3	Female	50	Nurse	1	Vocational school	Part time	No
4	Female	30	Nurse	0	Vocational school	Part time	No
5	Female	40	Nurse	≧3	Junior college	Part time	Yes
6	Male	40	Healthy Adult	1	Graduate school	Full time	No
7	Female	50	Healthy Adult	0	Graduate school	Self-employed	No
8	Female	50	Healthy Adult	≧3	University	Self-employed	Yes
9	Male	40	Healthy Adult	1	Graduate school	Full time	No
10	Male	40	Healthy Adult	0	Graduate school	Full time	No
11	Female	20	Healthy Adult	0	Vocational school	Full time	No
12	Female	20	Healthy Adult	0	University	Full time	No

586 HCP: Healthcare Provider, HA: Healthy Adult
587
588

589 Table 1. Characteristic of participants continued

No	Interview Month	Period between 2nd Vaccination and Interview	Duration of Interview (min)	HLS-14 Total Score	Functional Health Literacy	Communicative Health Literacy	Critical Health Literacy
1	Sep. 2021	5 months	29	56	20	20	16
2	Sep. 2021	5 months	31	53	20	18	15
3	Oct. 2021	5 months	38	55	18	19	18
4	Oct. 2021	2 months	29	63	25	23	15
5	Aug. 2021	2 months	27	51	15	20	16
6	Sep. 2021	20 days	30	58	25	19	14
7	Lost to follow up			55	18	19	18
8	Nov. 2021	1 month	62	42	23	13	6
9	Oct. 2021	22 days	37	59	25	19	15
10	Oct. 2021	15 days	32	63	21	25	17
11	Nov. 2021	24 days	36	55	22	17	16
12	Nov. 2021	16 days	32	58	21	21	16

590 HLS-14: 14-item Health Literacy Scale for Japanese adults
591



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593 HCP: Healthcare Provider, HA: Healthy Adult

594 Figure 2. Number of the new infections and cumulative 2nd vaccination rate in Tokyo, Jan.21- Nov.21

595 Table 2. Analytical process for the interviews

	Participants	**1st Coding: Identifying**	**2nd Coding: Sorting**	**3rd Coding: Condensation**	**Categorization**	**Generalization of Perceptions**	**Vaccine Recommendation**	**Messages**
HCP	5	267	146	94	59	26	3	3
HA	6	355	226	140	68	27	6	7

596 HCP: Healthcare Provider, HA: Healthy Adult

597

598

599 Table 3. Healthcare Providers' perceptions for each category of the Health Belief Model

	Perceptions	**Quote, typical descriptions**
Perceived Susceptibility	Possibility of getting infected at my hospital	*#2_Because I have engaged in a hospital, I recognize that the risk of transmitting the COVID-19 to my family was higher than the general people.*
		#3_Since I worked at a hospital, I was vaccinated so that my elderly parents would not be infected.
Perceived Severity	If unvaccinated and when infected with COVID-19, the disease could be severe.	*#1_Those who were severely ill and hospitalized have not been vaccinated.*
		#5_A person I know was infected with COVID-19 and died. The person had not been vaccinated.
	COVID-19 infection could bring on sequelae.	*#2_Even if a person is infected and survives, the residual damage to the lungs is quite significant.*
		#2_The fear of the COVID-19 was that the infection will leave taste and smell disorders, such functional disorders whose curability is uncertain.
	Non-vaccination could affect relationships with others.	*#2_If unvaccinated, relationships and personal aspects may be affected a bit.*
	I felt that the number of severely infected patients had been increasing.	*#1_Since the delta variant was spread, the severe cases in young people had increased.*
		#5_Currently, many unvaccinated people are dying.
	*Even if I get infected, it might not be severe.	*#2_I was wondering about the vaccination because even if I got infected, it would most likely be mild.*
Perceived Threat	If I get infected in the hospital, I could transmit it to my family.	*#2_Because I have engaged in a hospital, I recognize that the risk of transmitting the COVID-19 to my family was higher than the general people.*
		#3_Since I worked at a hospital, I was vaccinated so that my elderly parents would not be infected.
	I got scared when the number of infections increased dramatically in Tokyo.	*#5_My husband had been living alone in Chiba, but he was afraid to return home because the infected cases had increased in Tokyo.*
Perceived Benefits	The vaccination could suppress the risk of infection and becoming severely ill.	*#5_Because I had the vaccine, my condition was not severe when I got infected. Therefore, I recommend others to get vaccinated.*

		#4_The role of the vaccine is to protect the vaccinated person from getting infected and severely ill.
	The number of infected people is actually decreasing, and we are realizing the effectiveness of the vaccine.	*#1_I felt that the vaccine was already having a significant effect.*
	Gradual easing of previously restricted life.	*#3_I am glad that the vaccination will improve the whole society and bring us closer to pre-pandemic.*
Perceived Barriers	Concern about side effects from the vaccination	*#3_I was concerned about the high occurrence of side effects of the COVID-19 vaccine, while the conventional vaccine did not cause that many side effects.*
		#4_My concern was about side effects, so I gathered information on the Internet and social networking sites before getting the vaccine.
	The fact that this is a novel type of vaccine is worrisome.	*#2_Since I did not know what would happen in the long term, I was vaccinated with Pfizer and my wife was with Moderna for diversification of risks*
		#3_Since it is the novel type of vaccine, I am concerned about side effects that are not yet known and the lack of long-term data.
	I heard that some people died after getting the vaccine.	*#1_I heard of someone who died within a few days of being vaccinated.*
	I have seen and heard some unreliable information about vaccines.	*#4_I received information on social media that the COVID-19 vaccine will lead to infertility or that the vaccine contains mercury.*
		#5_I heard a false story that the vaccination makes children infertile.
	I have seen and heard from vaccinated people that the side effects were very painful.	*#4_My colleagues in their late 20s and 30s told me that they had had significant side effects.*
		#1_My colleagues and I talked about how serious it would be if the vaccine which caused such a high fever was available to the public.
	*In order to make unvaccinated people feel secure, it is necessary to have a point of contact	*#3_Some young people may be too scared to get vaccinated, so it would be nice if there was a support system where they could feel free to talk about it.*

	where they can easily talk about vaccine concerns.	*#3_At the vaccination site, the vaccination procedure was clerical so that some people probably did not ask anything even if they want to.*
	*The side effects were not as severe as I had expected.	*#4_I had a slight fever after the second vaccination, but it subsided while I was sleeping. It was milder than I had expected.*
Perceived Self-Efficacy	A sense of responsibility as a healthcare provider led me to take the vaccine.	*#3_I felt responsible as a nurse, so I got the vaccine.*
	As a healthcare provider, I respond sincerely to inquiries about the vaccination from family and friends.	*#2_My friends asked me about getting the vaccine.*
		#4_My friend asked me some questions about what to do after getting the vaccine and what the site looked like.
	Getting the vaccine gave me a sense of security.	*#3_It gave me a sense of security because the vaccination reduced the risk of serious illness when I was infected and the risk of transmitting the infection to my parents.*
		#2_Since I got the vaccine, the risk of infection in my practice has decreased and I felt some relief.
	*It is important to know about the vaccines.	*#4_The fact that I did not know about the vaccine was the most frightening thing for me, so I decided to properly learn about it. By knowing, I was able to prepare myself to accept the vaccine and took it with a sense of security.*
Cue to Action	Although it was not compulsory, an atmosphere existed that healthcare providers should be vaccinated.	*#2_Because of the hospital workers' position, the atmosphere was such that everyone had to take the vaccine.*
	Since people around me were being vaccinated, I decided to get vaccinated too.	*#3_Most of my colleagues listed their names on the reservation sheet for vaccinations, so I went with the flow.*
	Because it was recommended by other healthcare providers or specialists.	*#2_The specialist told us that we had better get the vaccine as possible.*
		#5_The doctor I know told me that it is very risky not to get the vaccine if you are over 40.
	Reminder to vaccinate	*#1_I received a reminder email from the hospital's infection control department about vaccination.*

Vaccine Recommendation	Recommend everyone to get vaccinated.	*#1_I recommend that everyone get the vaccine for now. The people who were getting seriously ill were unvaccinated, and they have been hospitalized one after another, so they need to know that this is no ordinary cold.*
		#4_Whether or not a person has been vaccinated will change the hospital's acceptance when he is infected.
		#2_At this point, I believe the benefits are much higher, and the only solution to the current situation that has changed with COVID-19 is the vaccination.
	Ultimately, it is up to the individual to decide the vaccination.	*#2_I recommended vaccination to my wife, but told her to make the final decision on her own.*
In conversation	I talked mostly about side effects with others, but I told them they did not need to be scared.	*#4_Since I wanted my friend to think positively about getting the vaccine, I told her that this has the kind of side effects that would occur, but I also told her that there was nothing to be afraid of, and gave her the correct information as far as I knew.*
		#3_I explained in detail to my family members who were not vaccinated about the situation when I was vaccinated. After the vaccinations, I hardly had any fever, so I told them that I was fine and recommended that they get vaccinated as well, since it would suppress the risk of serious illness.
	I told my family that I felt secure after the vaccination.	*#3_The vaccination gave me a sense of relief, and I shared that feeling with my family.*

*Factors that affect the perceptions

601 Table 4. Healthy adults' perceptions for each category of the Health Belief Model

	Perceptions	**Quote, typical descriptions**
Perceived Susceptibility	Even with the vaccine, it is possible to get infected.	*#8_I was infected after the first vaccination.*
		#11_Vaccination makes antibodies, but it does not mean we will never be infected.
	I began to be aware of COVID-19 when I found out that someone close to me was infected.	*#8_When someone close to me got infected, or when nearby schools and nursery schools were closed, I had the feeling that COVID-19 was coming close to me.*
	The number of infections had risen dramatically in Tokyo, and I suspected I would be infected.	*#11_In August, the infected cases in Tokyo were so high that I thought it would be better to vaccinate than to get the infection.*
	*I assumed that if no one else around me had a history of infection, I would not get it either.	*#8_Since the nursery teachers I knew, who had a lot of contact with people, had not been infected, I believed that I did not need to be so scared of the infection.*
Perceived Severity	Non-vaccination could affect relationships with others.	*#12_When I initially told people around me that I had no intention of getting the vaccine, their reaction was cold, and I knew that many of them were concerned about being unvaccinated.*
		#10_I think the most serious problem with the vaccine is not side effects, but discrimination against those who do not get the vaccine and those who oppose the vaccine.
		#12_I can understand the thoughts of those who do not vaccinate, and I hope the government should not make a vaccine passport that leads to discrimination.
	*Since many people in Tokyo have a history of the COVID-19 infection, the people around me did not care much even if I was infected.	*#8_When I told them that I was infected, she was not concerned because she also had a history of infection. In Tokyo, there are a lot of infected people, so even if someone is infected, they may not care that much.*
Perceived Threat	I am concerned if I get the infection and transmit it to people around me.	*#6_My wife has an underlying disease and has been vaccinated first, but I thought it would be pointless if I did not get vaccinated too.*
		#11_I am afraid of transmitting the infection to my parents unconsciously when I return to my parents' home.

Perceived Benefits	Vaccination protects you from infection and getting severely ill.	*#10_If one has an underlying disease, it is more likely to worsen when infected, and the whole body will be affected.*
		#12_I believe that the vaccination is not to prevent transmitting others from me, but to protect myself.
	If the number of infected cases is decreased, we can have dinner out and travel.	*#9_I expect that the vaccination will allow us to return to our hometown and travel with our families.*
		#6_I expect that vaccination will alleviate what I have to endure, such as eating and drinking with friends.
	Realize the effectiveness of vaccination in preventing infection	*#11_I believe that the reason why the number of infected cases has decreased in Tokyo is that the vaccination has progressed.*
		#8_After I was infected, my unvaccinated family members got infected, but my vaccinated family members did not.
Perceived Barriers	Concern about side effects from the vaccination	*#8_I got a fever post-vaccination. I am concerned about vaccines that have a high probability of side effects when vaccinated.*
		#12_I do not like to get vaccines when I do not know what side effects will occur.
	I have seen and heard that the side effects were painful.	*#9_My wife had a strong side effect after the vaccination, so we are thinking that the third time will be very tough.*
		#11_I heard that my friend had a fever and headache after the vaccination, and that it was hard to sleep because of the pain in her whole body, not just in her arms, and I did not want to get the vaccine.
	The fact that this is a novel type of vaccine is worrisome.	*#11_As it had not been long since the vaccination was approved by the government, I was concerned about how my body would react after the vaccination in the future.*
		#11_I am scared of the vaccine simply because it is a novel one.
	I am not in a rush to get the vaccine.	*#8_The vaccine reservations were booked up immediately, and since I was not planning on getting vaccinated that eagerly, I thought lightly I would just get the vaccine if I could simply reserve it.*
		#9_I waited for the vaccination until I was sure that my generation was vaccinated and had no problems.

	Concern about the impact of side effects on my business.	*#12_Some young people do not like getting the vaccine because their salary will be decreased if they have to take a leave due to side effects.*
	Spikevax™ may cause strong side effects.	*#6_I heard that one of my colleagues had been vaccinated with Spikevax™, and that he had a painful side effect from the first dose. I felt that the side effect varies depending on the vaccine.*
		#10_Each vaccine has different side effects, with Spikevax™ causing more severe reactions at the injection site than the Comirnaty™.
	Uncertain information about the vaccination.	*#12_Sometimes, I found questionable information on social media that said the COVID-19 vaccine would affect our immune system and cause death.*
	*The side effects were not as severe as I had expected.	*#6_The first vaccination did not cause any symptoms, and the second vaccination caused only a slight fever and fatigue the day after, so it felt like just a cold.*
		#12_My impression of the vaccination was that the side effects were much milder than I had expected.
	*It is important to communicate accurate information.	*#6_I would like to provide as much correct information as possible to those who are concerned about the vaccination.*
Perceived Self- Efficacy	Getting the vaccine gave me a sense of security.	*#6_After the second vaccination, a sense of security grew inside me.*
		#8_I was relieved that all my family members were vaccinated twice.
	My concerns were eased after I talked with a vaccinated person.	*#6_My concerns were eased when I talked with family members and colleagues who had taken the vaccine first.*
	*Originally, I had no intention of getting vaccinated.	*#12_Since I am basically weak, I thought I would have stronger side effects from the vaccine than other people. Therefore, I did not intend to get the vaccine until my primary doctor recommended it.*
Cue to Action	An atmosphere of compulsion to vaccinate existed	*#12_"Are you not going to get the vaccine?" I was asked, and the atmosphere of being under compulsion from colleagues in my office existed.*

		#9_In my workplace, I sometimes have to work with several colleagues in a narrow space. At that time, the atmosphere of needing to check the vaccination status forced me to get the vaccination too.
	Since people around me were being vaccinated, I decided to get vaccinated too.	*#11_The people around me who were close to my age were also vaccinated, so I decided to get vaccinated too.*
		#12_When the delta variant spread, young people and people without underlying diseases were also infected, and my colleagues around me were getting vaccinated, so I decided to get vaccinated as well.
	Took the vaccine because it was recommended by a physician or an acquaintance.	*#8_A colleague strongly recommended getting the vaccine, and then looked for a clinic where I could be vaccinated. With the push of my colleague, I decided to get the vaccine.*
		#12_My primary physician recommended vaccination after the delta variant spread.
	Making the vaccine reservation was simple.	*#11_It was easiest to make a reservation through the Chuo City reservation system.*
	*Making the vaccine reservation was difficult.	*#8_In early July, my husband tried to make an appointment for me, but it was booked up immediately. After that, I did not try it again for a while.*
Vaccine Recommendation	I recommend the vaccination to close persons.	*#10_I recommend vaccination to close persons because the risk of serious illness is high if they are infected with COVID-19.*
	I do not actively recommend the vaccination.	*#11_If someone is wondering if he should be vaccinated, I will tell him my experience, but I will not recommend it to someone who is not willing to be vaccinated.*
		#12 _I did not intend to be vaccinated at first. I do not actively recommend it because it is up to you whether you want to be vaccinated or not.
	Not vaccinating is an option.	*#11_I think not getting vaccinated is an option, so it is not something that should be forced.*
In conversation	We talked about the differences between the vaccines.	*#6_Some of my colleagues had been vaccinated with Comirnaty™ and some others with Spikevax™, so we talked with each other about the differences in*

		side effects.
	Talked about the experience of vaccination.	*#6_As much as possible, I would like to share with the unvaccinated what I have experienced and what I know.*
	I shared with others the relief I felt after getting the vaccine.	*#11_I shared with others the relief I felt after getting the vaccine.*
	I told them that they did not need to be concerned so much about vaccination.	*#11_I told others that I had a fever after the second vaccination, but it was not hard, so there was no need to worry so much.*
	Checking each other's vaccination status in casual conversation.	*#12_With specific intention, "Have you been vaccinated?" or "How many doses of the vaccine have you had?" were common in the conversation. However, these were considered to be the vaccine related harassment within the company.*
		#6_In the near future, when the restrictions are lifted and I meet my friends, I will casually ask them if they have been vaccinated.

602 *Factors that affect the perceptions
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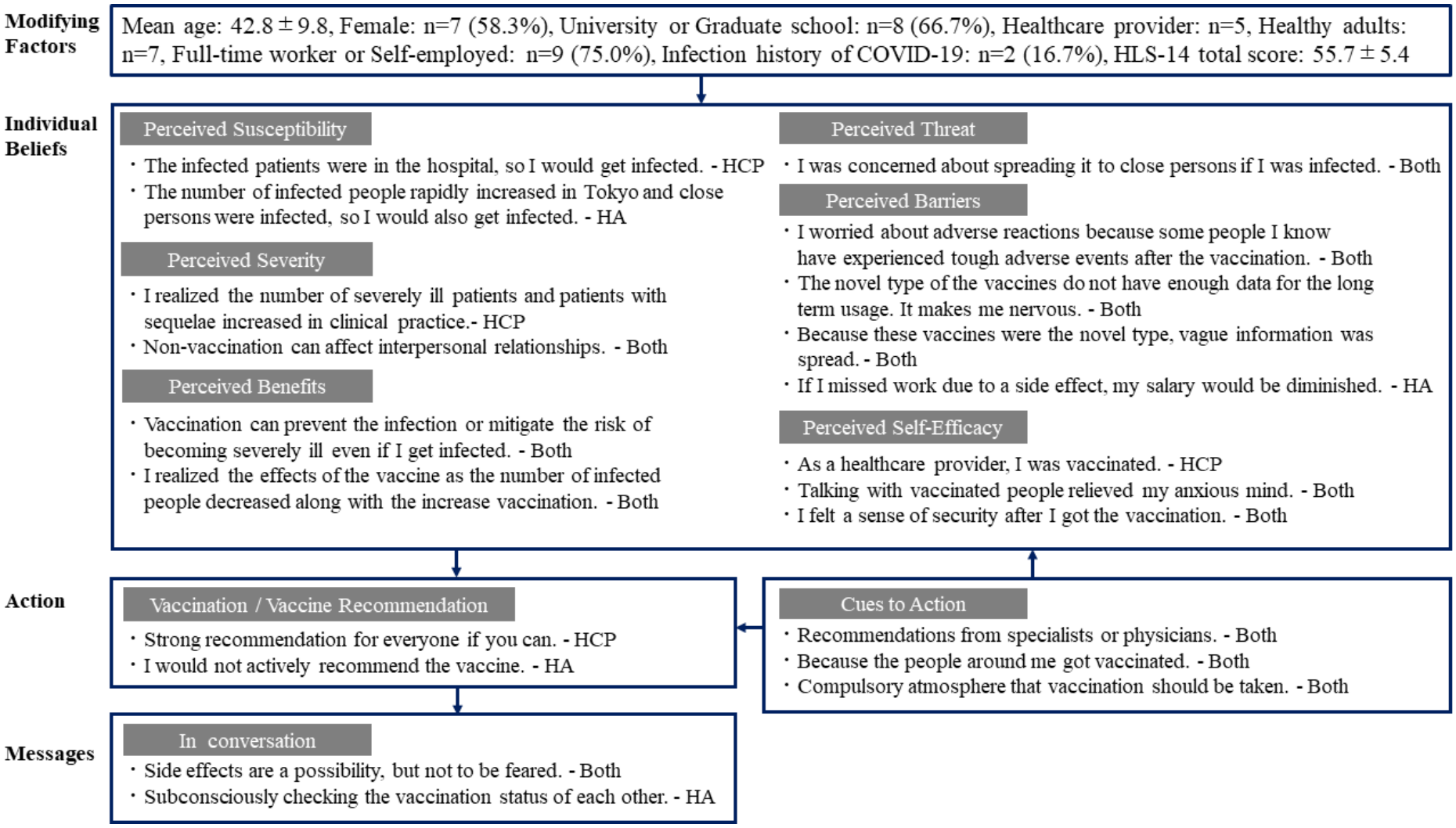
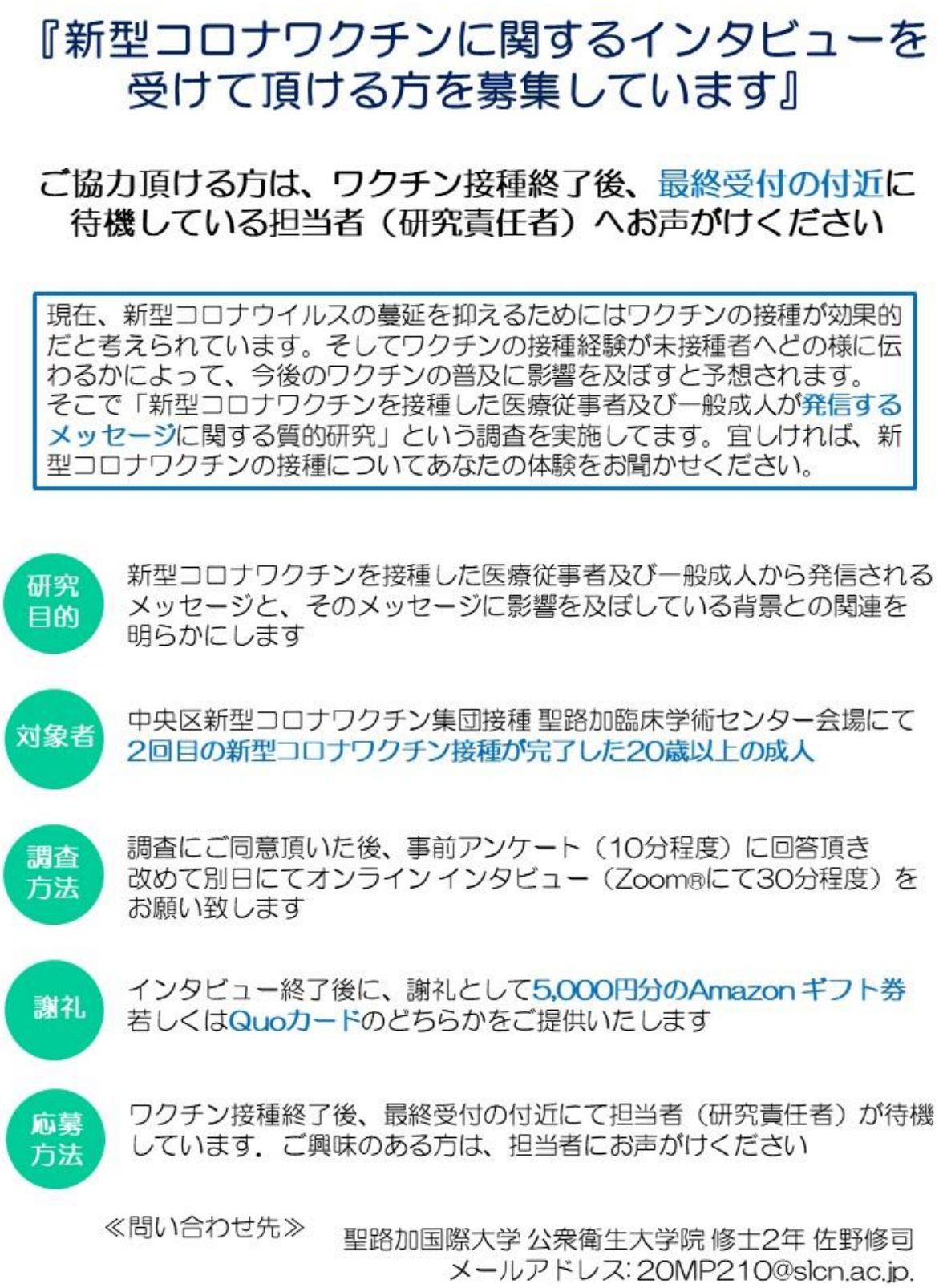


HCP: Healthcare Provider, HA: Healthy Adult

Figure 3. Summary results based on the Health Belief Model

6. Appendix



Appendix_Figure 1. The poster for recruitment

Appendix_Figure 2. The displayed poster

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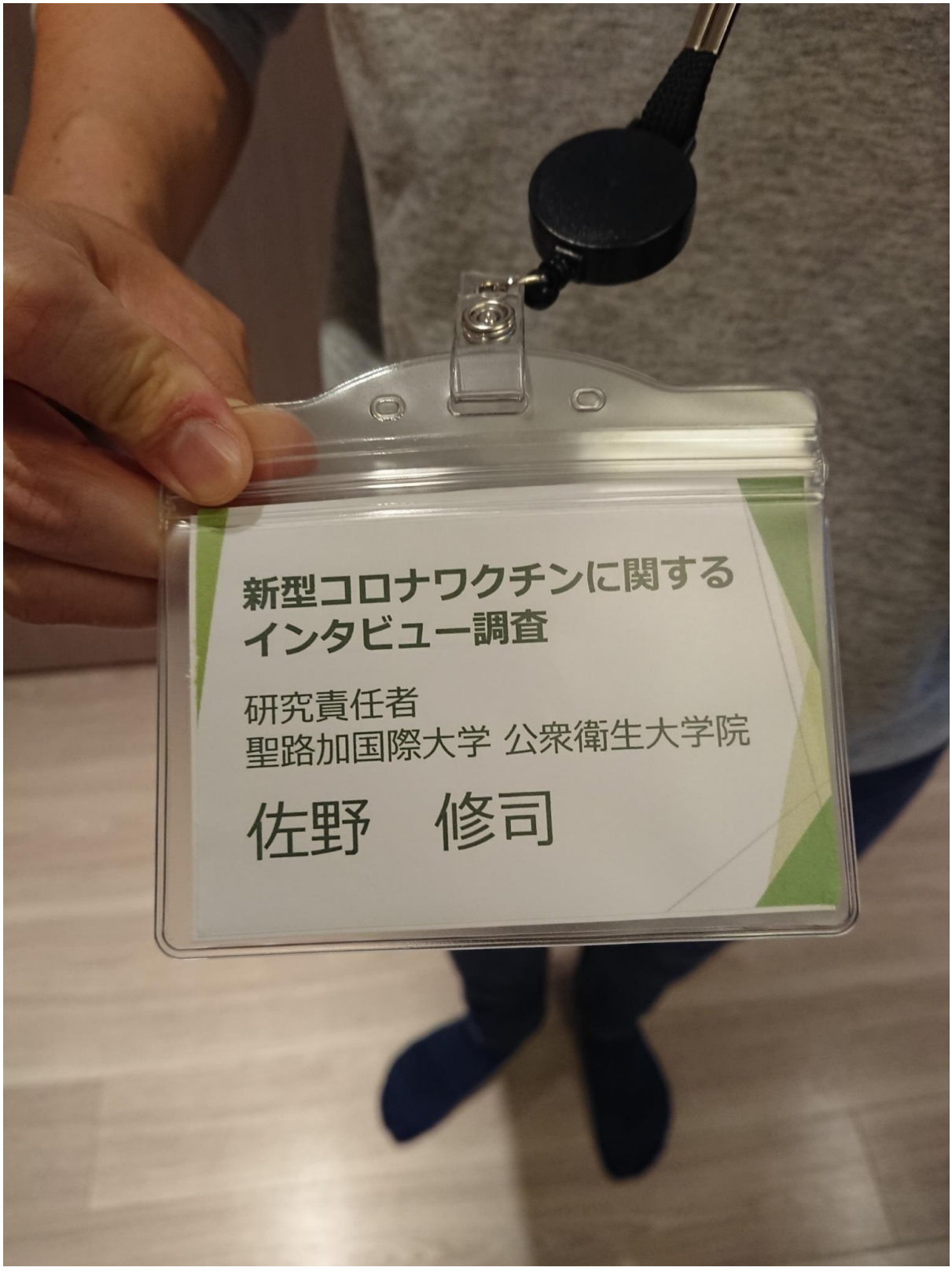
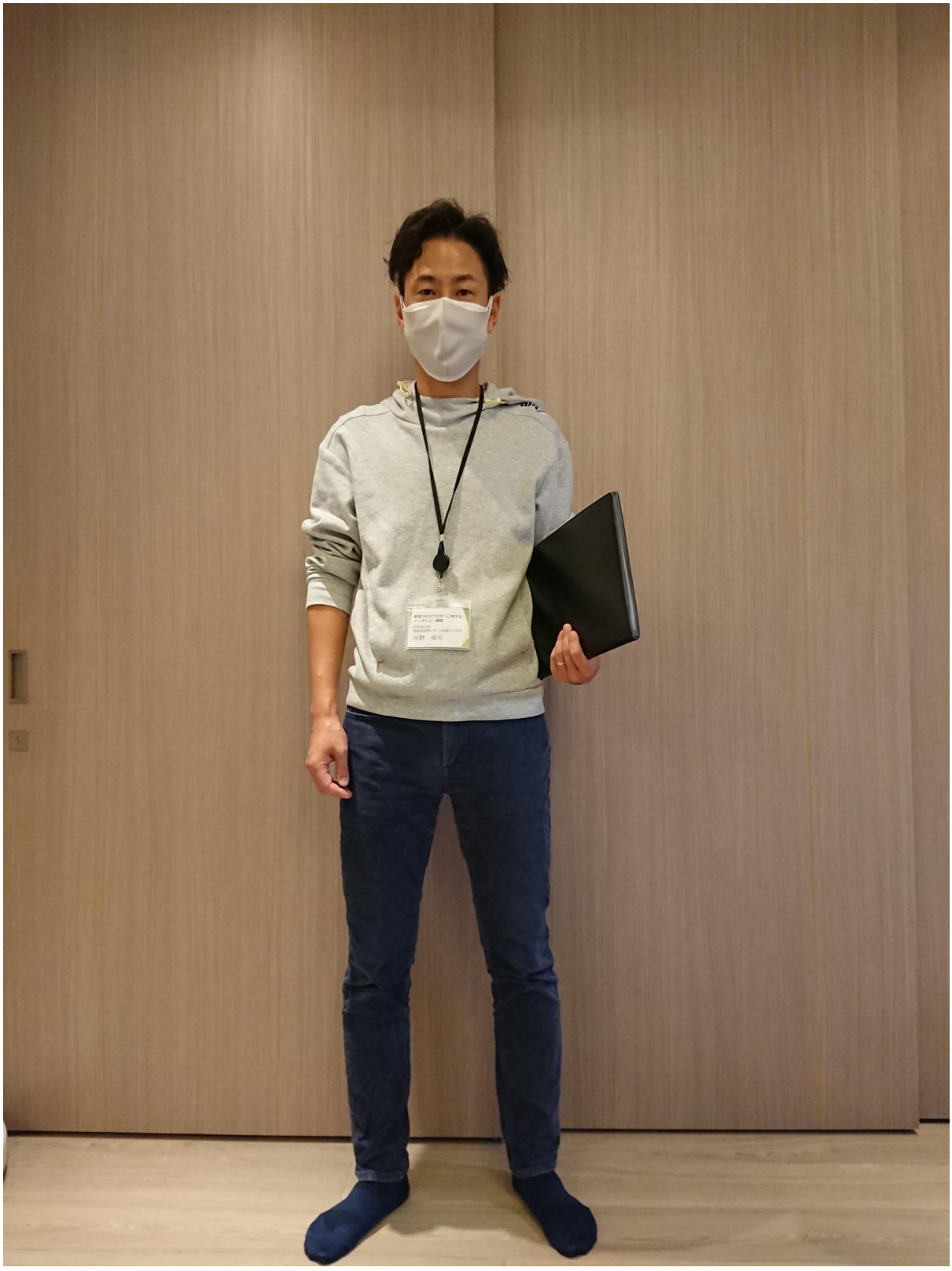
613 Appendix_Figure 3. The room for the study explanation



Appendix_Figure 4. The name tag for identity of the researcher



Appendix_Figure 5. Dressing the researcher

Appendix_Table 1 Healthcare Providers' Perceptions for each category of the Health Belief Model in Japanese

	Perception	**Quote, typical description**
Perceived Susceptibility	務めている病院で感染してしまう可能性がある	*#2_病院に務めているので家族にうつしてしまうリスクが一般の人と比べて高いことを認識している。*
		#3_病院に務めていたので高齢の両親にうつしてしまわない為にワクチンを接種した。
Perceived Severity	ワクチン未接種でコロナに罹ると重症化する	*#1_重症化して入院している人はワクチンを打っていない*
		#5_知り合いの人が新型コロナウイルスに感染して亡くなった。その人はワクチンを打っていなかった。
	コロナに罹ると後遺症が残る	*#2_感染して命は助かったとしても、肺に残るダメージは結構大きい。*
		#2_感染すると味覚・臭覚障害と治るか分からない機能障害を残すのが新型コロナウイルスの怖いところ
	ワクチン未接種だと人間関係に影響を与える可能性がある	*#2_ワクチン未接種だと人間関係とかプライベートの部分で少し影響が出る可能性がある。*
	重症者が増えている実感がある	*#1_デルタ株になってから、若者の重症化が増えた。*
		#5_いま、ワクチンを打っていない人がたくさん亡くなっている。
	*感染しても重症化しないかもしれない	*#2_感染しても問題ない確率も高いんじゃないかと思い、接種を迷った。*
Perceived Threat	病院で感染してしまうと家族にうつす可能性がある	*#2_病院に務めているので家族にうつしてしまうリスクが一般の人と比べて高いことを認識している。*
		#3_病院に務めていたので高齢の両親にうつしてしまわない為にワクチンを接種した。
	東京で感染者数が増えて怖くなった	*#5_夫は千葉に単身赴任していているが、東京で感染者数が増えているので怖がって東京に帰ってこない。*
Perceived Benefits	ワクチン接種によって感染・重症化リスクを抑えられる	*#5_私はワクチンを打っていたので、罹っても重症化しなかった。そのため、他の人にもワクチン接種を勧める。*
		#4_ワクチンの役割として接種者を感染から防ぐ、重症化を防ぐことができ

		る
	実際に感染者数が減っていてワクチンの効果を実感している	*#1_もうだいぶワクチンの効果が出てきているような感じがある。*
	今まで制限されていた生活が徐々に緩和される	*#3_ワクチン接種によって社会全体が良くなって、コロナ前に近づくと嬉しい*
Perceived Barriers	ワクチン接種による副反応が心配（重篤なイベントを含め）	*#3_従来のワクチンではそんなに副反応は出なかったのに、新型コロナワクチンでは副反応が多いことが心配。*
		#4_心配事は副反応のことだったので、ワクチン接種する前にインターネットや SNS で情報を収集した。
	これまでに無い新しいタイプのワクチンという事が不安	*#2_長期的に何が起こるか分からないから、自分はファイザーだったので奥さんはモデルナを接種してリスクを分散した。*
		#3_新しいタイプのワクチンなので、まだ分かっていない有害事象や長期データがないことが不安である。
	ワクチンを打って亡くなった人がいると聞いた	*#1_ワクチンを接種して数日以内で亡くなったという人を聞いた。*
	ワクチンに関して不確実な話を見聞きする	*#4_ワクチンを打つと妊娠できなくなるとか、ワクチンに水銀が入っているなどの情報を SNS で見かけた。*
		#5_ワクチン接種すると子供は不妊になるというデマ話を聞いた。
	副反応が辛かったという話を見聞きした	*#4_20 代後半から 30 代の同僚から副反応が強く出たと聞いた。*
		#1_同僚とこんなに熱が出るワクチンが一般に出たらヤバイという話をした。
	*安心して貰うためにワクチンに関する事を気軽に話せる窓口が必要	*#3_若い人は怖くて接種出来ない人もいると思うから、安心して接種できるよう気軽に話をできるようなサポートがあるといい。*
		#3_接種会場では事務的になるので、多分、言いたいことも言えずに接種している人もいると思う。
	*副反応はそこまで辛くなかった	*#4_2 回目のワクチン接種後に少し熱が出たけれど、寝ている内に下がった。思ったよりも軽かった。*

Perceived Self-Efficacy	医療従事者としての責任感からワクチンを接種した	*#3_看護師としての責任感があったのでワクチンを接種した。*
	医療従事者として家族や友人からの相談にも真摯に答える	*#2_友人からワクチンを打った方がいいのか相談を受ける。*
		#4_友人からワクチンを打った後の注意点や会場の様子について質問を受けた。
	ワクチンを打って安心感に繋がった	*#3_ワクチン接種して感染した時の重症化リスクを抑えられることや、両親にうつしてしまうリスクが減ったので安心感に繋がった。*
		#2_ワクチン接種したので診療の中で感染するリスクが減って、気持ちが少し楽になった。
	*ワクチンについて知ることが大事	*#4_知らないっていう事とかが一番怖かったので、ちゃんと知っておこうと思った。知ることでワクチンを受け入れる準備が出来て、安心して打つことが出来た。*
Cue to Action	強制されてはいないが、医療従事者はワクチンを接種すべきとの空気感	*#2_病院従事者という立場上、みんな打たないといけないような雰囲気はあった*
	周りが接種するから自分も接種しようと思った	*#3_同僚は殆どワクチン接種の予約表に名前を記載したので、私も流れで記入した。*
	他の医療従事者や専門家から勧められたから	*#2_専門家の人に聞いてもやっぱり打った方が良いと言われた。*
		#5_知り合いの医師から40歳以上はワクチンを打たないと危険だと言われた。
	ワクチン接種を促すリマインド	*#1_病院の感染管理部よりワクチン接種のリマインドメールを受け取った。*
Vaccine Recommendation	皆にワクチン接種を勧める	*#1_もうとりあえず全員にワクチン接種を勧めたいです。重症化しているのはワクチンを打っていない人で、次から次へと入院してくるので、普通の風邪ではないことを知ってもらいたい。*
		#4_ワクチンを打っているかいないかで、感染した時に病院の受け入れが変わってくる。

		#2_現時点ではメリットの方が大きいと思っている。コロナで変わった現状の解決策としてはワクチン接種しかない。
	最終的には個人の判断	*#2_奥さんにワクチン接種を勧めたが、最終的には自分で決めるように伝えた*
In conversation	主に副反応について話したが、怖がることはないと伝えた	*#4_友人へワクチン接種を前向きに考えて貰いたかったので、副反応はこういったのが出ると伝えつつ、そんなに怖がることはないんだよと、知っている範囲で正しい情報を伝えた。*
		#3_未接種の家族へ自分が打った時の状況を細かく説明しました。打った後も熱は殆どでなかったし、大丈夫だよっていうことを伝えながら、重症化リスクも下がるから相手にも接種を勧めた。
	ワクチン接種して安心したことを家族へ伝えた	*#3_ワクチンを接種して安心感が得られたので、その気持ちを家族にも伝えた。*

621 *Factors that affect the perceptions

622 Appendix_Table 2. Healthy adults' Perceptions for each category of the Health Belief Model
623 in Japanese

	Perception	**Quote, typical description**
Perceived Susceptibility	ワクチンを打っても感染する可能性がある	*#8_1 回目のワクチン接種後に私自身が感染した。*
		#11_ワクチン接種して抗体は出来るが、絶対罹らないわけではない。
	身近にコロナ感染者が出てから初めて新型コロナを意識しはじめた	*#8_身近な知り合いが感染したり、近くの学校や保育園が休校・休園になると、新型コロナウイルスが迫っている感覚がした。*
	東京で感染者数が増えて自分も感染するかもしれないと考えた	*#11_8月は東京の感染者数が凄く多くて、罹るよりもワクチンを打った方が良いと考えた。*
	*周りに感染経験の人がいないと、自分も感染しないと思った	*#8_人と接触機会が多い保育士が感染していないので、そこまで感染に怯えることはないと思った。*
Perceived Severity	ワクチン未接種が人間関係に影響を与える	*#12_私が初期に打たないって言った時、周りの人達の反応が冷たくて、ワクチン未接種を気にしている人が多いと思った。*
		#10_ワクチンの恐ろしさは副反応ではなく、打たない人たちやワクチンを反対する人達に対する差別だと思う。
		#12_ワクチンを打たない人たちの気持ちも理解できるので、差別に繋がるワクチンパスポートを作らないで欲しいと思う。
	*東京はコロナ感染歴を持つ人が多いので、罹ってもそこまで気にされない	*#8_感染したことを伝えると、その人も感染歴があるので気にされなかった。東京は感染者数が多いので、感染してもそこまで気にされないかもしれない。*
Perceived Threat	自分がコロナに罹って周りにうつすのが心配	*#6_妻が基礎疾患を有しており先にワクチンを接種しているが、自分も接種しないと意味がないと思った。*
		#11_実家に帰省する際に両親にうつしてしまうことが正直怖い。

Perceived Benefits	ワクチン接種は感染や重症化から自分を守る	*#10_基礎疾患を持つと感染した時に悪化しやすく、体全体にも影響がある。*
		#12_人にうつさないためにワクチンを打った訳ではなく、自分を守るために打つものだと思っている。
	感染者数が減れば外食や旅行に行けるようになる	*#9_ワクチン接種によって帰省や家族と旅行に行けることを期待している。*
		#6_ワクチン接種によって友人と飲食するなど、我慢していることが緩和されることを期待している。
	ワクチン接種による予防効果を実感している	*#11_いま東京は感染者数が落ち着いているのは、ワクチン接種が進んでいるからだと思う。*
		#8_私が感染した後、ワクチン接種していない家族は感染してしまったが、ワクチン接種していた家族は感染しなかった。
Perceived Barriers	ワクチン接種による副反応が心配	*#8_ワクチン接種後に自分も熱が出ました。接種したら高い確率で副反応が出るワクチンってどうなの？と思いました。*
		#12_副反応でどういう影響が出るのか分からない状態で打ちたくない。
	副反応が辛かったという話を見聞きした	*#9_妻はワクチン接種後に副反応が強く出てしまったので、3回目はかなり厳しいと考えている。*
		#11_友人はワクチン接種後に熱や頭痛が出たり、腕だけではなくて全身痛くて寝ているのも辛いというのを聞いて、それが出ると嫌だなと思った。
	これまでに無い新しいタイプのワクチンという事が不安	*#11_接種が決まって短いので、今後、接種してから自分の体にどういう反応がでるのか不安ではあった。*
		#11_単純に新薬だから怖いと思っている。
	ワクチンの接種を急いでいる訳ではない	*#8_ワクチンの予約が直ぐに埋まってしまい、そこまで積極的に接種しよう*

		と思っていなかったから、取れたら行こうかなぐらいの軽い気持ち。
		#9_自分と同じ世代の人がワクチン接種して問題ないことを確認するまで様子を見ていた。
	副反応による仕事への影響が心配　（雇用形態が影響している）	*#12_副反応で仕事を休むと給与が出ないので、ワクチンを打たない若い人達がいる。*
	モデルナのワクチンは副反応が強く出る	*#6_同僚でモデルナを接種した人がいて、その人は 1 回目の接種から副反応が辛かったときいて、ワクチンによって副反応が違うと感じた。*
		#10_ワクチンによって有害事象がそれぞれ違ってきて、モデルナのワクチンは注射部位反応がファイザーのワクチンよりも強くでる。
	ワクチン接種に関する不確かな情報	*#12_新型コロナワクチンを接種すると免疫に影響して、死亡するとの内容を SNS 上でみた。*
	*副反応は思ったほど辛くなかった	*#6_1 回目の接種は何もでなくて、2 回目は接種した翌日から微熱と倦怠感程度で、ちょっと風邪ひいたかなぐらいの感覚。*
		#12_接種した感想としては、副反応は思っていたより全然軽かった。
	*正しい情報を伝えることが重要	*#6_ワクチン接種に不安がある人には出来るだけ正しい情報を伝えてあげたい。*
Perceived Self-Efficacy	ワクチンを打つと安心感につながる	*#6_2 回目のワクチン接種後に自分の中に安心感が芽生えた。*
		#8_家族全員が 2 回ワクチン接種したので安心した。
	ワクチン接種者の話を聞いて不安は和らいだ	*#6_ワクチンを先に接種した家族や同僚から話を聞いて、不安は和らいだ。*
	*元々はワクチンを接種する意思はなかった	*#12_自分は体が弱いので、他の人よりワクチンの副反応が強く出ると考えていた。なので、主治医に勧められるまではワクチンを接種するつもりは*

		なかった。
Cue to Action	ワクチン接種を強制する空気感があった	*#12_〝ワクチン打たないの？〟と会社の人から強制するような雰囲気はあった。*
		#9_仕事上、狭いスペースのなか複数人で作業することがある。その時はワクチンの接種状況を確認していたので、自分も打たないといけないような雰囲気になった。
	周りがワクチンを打つと、自分も打とうという気持ちになる	*#11_年が近い周りの人達も接種していたので、自分も接種しようと思った。*
		#12_デルタ株が流行った時に若い人や基礎疾患が無い人も感染していて、周りの同僚もワクチンを接種したので、自分も接種しようと思った。
	医師や知人から勧められたのでワクチンを接種した	*#8_同僚がワクチン接種を強く推奨してきて、自分のために接種できるクリニックを探してくれた。同僚に背中を押されてワクチンを接種しようと思った。*
		#12_デルタ株が流行りだしてから主治医よりワクチン接種を勧められた。
	ワクチンの予約が直ぐに取れた	*#11_中央区の予約システムで予約するのが一番簡単だった。*
	*ワクチンの予約が取り難い	*#8_7 月上旬に夫が自分の分の予約を取ろうとしたが直ぐに予約が一杯になってしまった。そこから探さなかった。*
Vaccine Recommendation	近しい人達にはワクチン接種を勧める	*#10_新型コロナに罹ってしまった時のリスクが高いから、近しい人達にはワクチン接種を勧める。*
	ワクチンを積極的に勧めることはない	*#11_接種しようか迷っている人には、自分の経験を伝えるが、打ちたくないと言っている人には勧めることはない。*

		#12 _自分も最初は接種するつもりはなく、接種するかどうかは自由だから、積極的に勧めることはしない。
	ワクチンを打たない事もひとつの選択肢	*#11_打たないのも選択だと思うので、強制することではない。*
In conversation	ワクチンの違いについて話した	*#6_同僚はファイザーを接種した人とモデルナを接種した人がいたので、副反応などの違いについてお互い話をした。*
	ワクチン接種の体験について話した	*#6_出来るだけ自分が体験したことや知っている事は未接種者へ伝えてあげたいと思っている。*
	ワクチンを打った後の安心感を他の人にも伝えた	*#11_ワクチンを接種して安心感があったことを伝えた。*
	そこまで心配する必要はないことを伝えた	*#11_2回目のワクチン接種後に熱は出たけどきつくなかったから、そこまで心配する必要はないと伝えた。*
	何気ない会話の中でワクチン接種を確認しあっている	*#12_特別な意図はなく、〝ワクチンを受けた？”、”何回目？”などの話になり、社内でワクチンハラスメントが話題になった。*
		#6_今後、規制が緩和されて友人に会った時はワクチンを接種したか何気なく聞くと思う。

624 *Factors that affect the perceptions

Acknowledgments

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