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Questionnaire Survey on COVID-19 Vaccination at Okayama University in Japan: Factors Promoting Vaccination Among Young Adults

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COVID-19 has been prevalent worldwide since 2019. Increasing COVID-19 vaccination coverage is an important measure to combat the disease. An online survey was conducted with university students and personnel who were vaccinated against COVID-19 at a mass vaccination event to examine the factors promoting vaccination among young adults. The online survey was conducted with persons vaccinated at Okayama University from June 5 to September 27, 2021. Although the number of those who had fever >37.5°C increased after the second vaccination compared to the first, the vaccinated persons got more satisfied after the second shot.

Keywords: COVID-19 vaccine, vaccine hesitancy, young adults, information literacy, satisfaction

1. Introduction

COVID-19 has spread worldwide since its discovery in 2019 [1, 2]. Recently, in Japan, there has been an increase in infections, called “the fifth spike,” and the number of new COVID-19 cases per day exceeded 25,000 persons, the highest rate of daily infection in the progression of the disease to date (Figs. 1(a), (b)) [3, 4]. The COVID-19 vaccine has been developed to combat this infectious disease, and its efficacy in preventing the appearance and aggravation of COVID-19 has been proven [5, 6]. Accordingly, vaccination has been strongly promoted in every country to acquire herd immunity. However, anti-vaccine movements have become an obstacle. Groundless information on the damaging side effects that the vaccination would cause, such as future infertility and the government conspiracy theories, emanate from a large number of people via social network services (SNSs). Consequently, young people tend to hesitate to be vaccinated [7–9].

Regarding COVID-19 vaccination in Japan, it was initially prioritized for healthcare workers and the elderly.

Since June 2021, vaccination coverage has extended to a wide range of age groups. At Okayama University, a large-scale COVID-19 vaccination effort for 12,000 persons was undertaken using the Moderna-Takeda vaccine from July 9 to September 15, 2021. Of these, 8,853 were students and university personnel at Okayama University, and students aged 18 to their 20s accounted for over 80%. The vaccination rate was 71.6% (7,332/10,240) of all students and 56.2% (1,449/2,577) of the faculty and staff, excluding university hospital faculty, staff, and medical, dental, and pharmaceutical students. Although some of the Okayama University Hospital staff and students in the Department of Medicine, Dentistry, and Pharmacy were vaccinated through this vaccination program, many of them had already been vaccinated through the preceding medical personnel quota. They were therefore excluded from the calculation of vaccination coverage. Those who completed the second shot of the COVID-19 vaccine around the same time accounted for 53.1% in Japan, 53.0% in Okayama Prefecture, and 41.3% were 12–64 years old [10]. It is thought that the vaccination rate was improved at an early stage by the COVID-19 vaccination program at the university, mainly among young people.

As of June 2021, when the decision was made to administer the vaccine at Okayama University, several circulating issues on the Moderna-Takeda COVID-19 vaccine’s efficacy and adverse reactions were disproved. This survey aimed to clarify the actual status of vaccination, including adverse reactions after vaccination, opportunities for vaccination, and post-vaccination awareness. We believe that effective communication related to these issues would help clarify them and promote further vaccination programs.



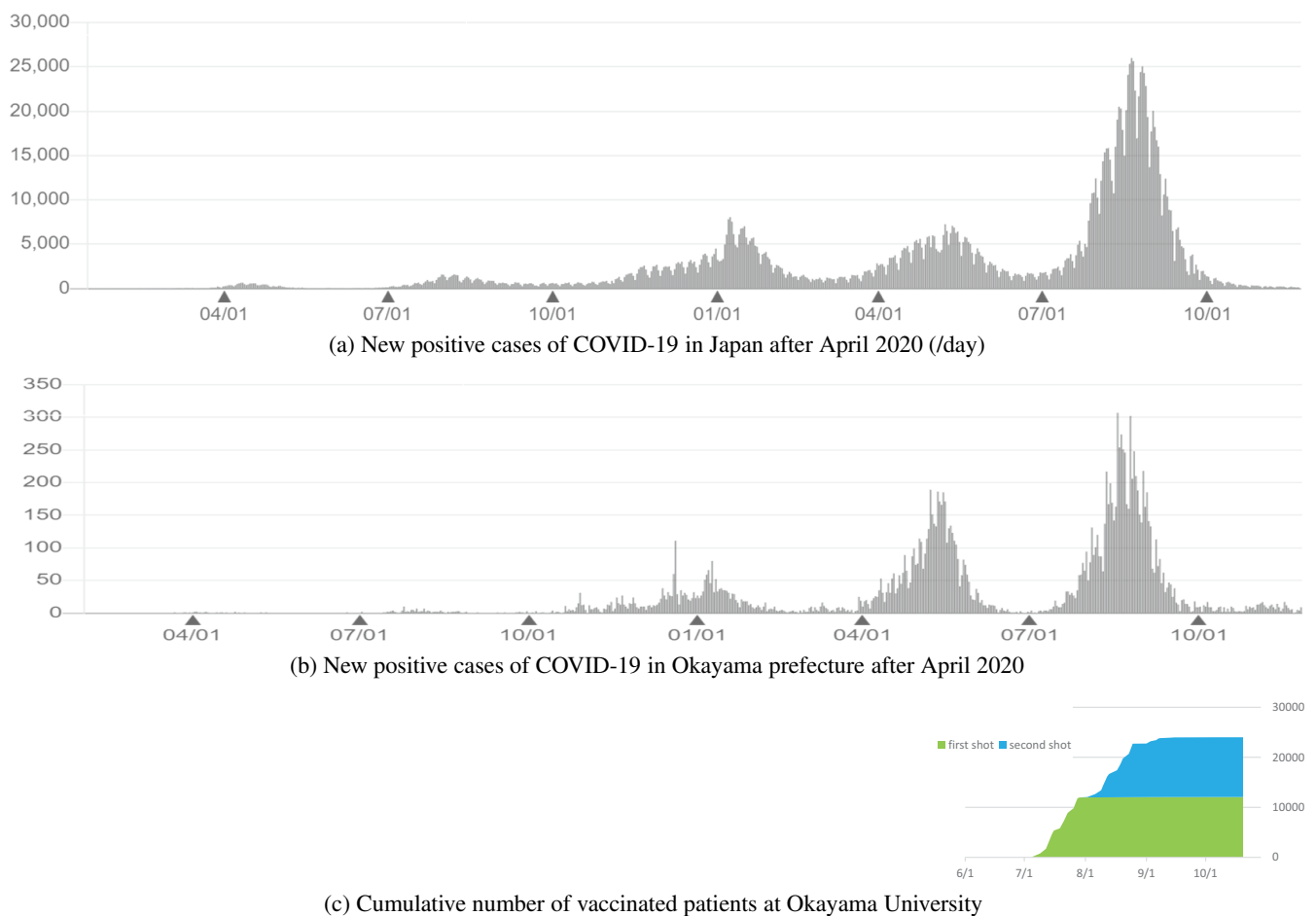


Fig. 1. New positive cases of COVID-19 and vaccinated patients at Okayama University. Diversion from <https://www.mhlw.go.jp/stf/covid-19/kokunainohasseijoukyou.html> [accessed November 21, 2021].

2. Methods

2.1. Vaccination Method

Approximately 24,000 vaccine doses for approximately 12,000 persons were administered at the main campus of Okayama University from July 9 to September 15, 2021. The Health Service Center sent a group email invitation to all university members and resent it several times. This survey contained (1) a questionnaire asking the recipients about their desire for the vaccination, (2) information about the vaccination, (3) guidance as to when the reservation period begins, and (4) guidance as to when the reservation period ends. On the website of Okayama University and that of the Health Service Center, the appeal for vaccination, including the message that the vaccination is voluntary, and the URL for public information disclosure in Japanese and English were provided.

A system was implemented in which reservation for the vaccination could be easily completed by accessing a URL provided in the email. For those who could not use the reservation system, alternative methods were also provided.

The university consists of many foreign students; therefore, different languages and religious preferences were

also taken into consideration. Furthermore, the availability and elective nature of vaccination were made publicly known.

2.2. Contents of the Questionnaire

The questionnaire consisted of three parts: information about the vaccinated person, adverse reactions to the vaccine, and thoughts on COVID-19 and the COVID-19 vaccine (**Fig. 2**). The questionnaires accompanying the first and second injections contained the same questions, enabling us to compare the changes between the two.

Information collected from vaccinated persons included age, sex, history of comorbidities, allergies, and attributes, such as nationality, affiliation with Okayama University, and their current position (e.g., faculty or student). These comprised questions Q1–Q10.

For adverse reactions to the vaccine, we adopted a method of checking the time with symptoms for each symptom to clarify the symptoms and duration seen immediately after vaccination to one week later. Nine optional questions were designed to clarify attitudes about COVID-19 and vaccines. Questions about behavioral restrictions often recommended to prevent COVID-19 were included, for example, Q17 “Please choose all the situations in which you think you need to wear a mask” and

Please tell us your information.	
1. Please choose the day of COVID-19 vaccination.	Select the date
2. How many times did you get the COVID-19 vaccine including this time?	Once/ Twice
3. Please choose your own age.	Under20/ 20s/ 30s/ 40s/ 50s/ Over60
4. Please choose your nationality.	Japan/ Other
5. Please select your affiliation.	Okayama University/ Other
6. Select your own attributes.	Student/ Faculty/ Administrative staff/ Others
7. Please select all underlying diseases that apply.	No underlying medical conditions Obesity (BMI \geq 30)/ Chronic respiratory disease/ Chronic heart disease and hypertension/ Chronic kidney disease/ Chronic liver disease/ Neurologic and neuromuscular disorders/ Hematologic disorders/ Diabetes/ Immunosuppression associated with disease or treatment/ Sleep apnea syndrome/ Others: a free text field will appear
8. Please select all applicable allergy history.	No history of following allergies/ Bronchial asthma/ Atopic dermatitis/ Allergic rhinitis (including hay fever)/ Food allergy/ Drug allergy/ Insect allergy (such as bees)/ Anaphylaxis/ Others: a free text field will appear
9. Please select your gender.	Male/ Female/ Other
This is a question for female. 10. Are you pregnant?	Not pregnant/ In pregnancy
Please tell us the reaction after vaccination.	
11. Please describe your symptoms immediately after vaccination (within 2 hours). Select the symptoms observed within 2 hours after vaccination and their appearance time. 1. Wheezing and dyspnea 2. Itching/ rash/ skin swelling 3. Vomiting and diarrhea 4. Decreased blood pressure and loss of consciousness 5. Others	For each question, choose one of the following (N/A, Within 15 minutes, Within 30 minutes, Within 1 hour, Within 2 hours)
12. Please select the local reaction of the vaccination site and the time when it appeared. 1. Swelling 2. Redness 3. Pruritus 4. Pain	For each question, choose one of the following (N/A, Within a day, Next day, Two days later, Three days later, Four days later, Five days later, Six days later, Seven days later)
13. What are your general symptoms after inoculation and when did they appear? Please check all that apply. 1. Fever \leq 37.5°C 2. Headache 3. Malaise 4. Chills 5. Nausea and vomiting 6. Diarrhea 7. Myalgia 8. Joint pain 9. Rash	For each question, choose one of the following (N/A, Within a day, Next day, Two days later, Three days later, Four days later, Five days later, Six days later, Seven days later)
14. Did you use antipyretic analgesics or take a rest for the symptoms that occurred after inoculation? 1. Use of antipyretic analgesics 2. Left class or work late or early 3. Missed class or work	For each question, choose one of the following (N/A, Within a day, Next day, Two days later, Three days later, Four days later, Five days later, Six days later, Seven days later)
15. If you had any other symptoms that bothered you, please indicate the symptoms and when they appeared.	Free writing section
16. How do you feel about the side effects of this vaccination compared to the influenza vaccine?	I have never had an influenza vaccine/ Milder/ Slightly less severe/ Slightly less severe/ No difference/ Slightly more severe Heavier/ Very severe and painful
Please tell us about yourself regarding COVID-19 and vaccines.	
17. Please choose all the situations in which you think you need to wear a mask.	School and workplace/ During extracurricular activities (club activities/ lessons etc.)/ Gathering with a small group of friends (including unvaccinated people)/ Gathering with a small group of friends (vaccinated people only)/ Home/ No need to wear a mask at any of these
18. Please choose all the activities that you think you could do right now.	Dinner without alcohol (including unvaccinated persons)/ Dinner without alcohol (vaccinated persons only)/ Drinking party (including unvaccinated persons)/ Drinking party (vaccinated persons only)/ Camping with friends/ Go to shopping mall/ Go to a movie theater/ Go to a sports club/ Karaoke or chorus with friends/ Travel within the prefecture/ Domestic (out-of- prefecture) travel/ Overseas travel/ Theater watching (including live concerts and sports games)/ None of the above should be done/ Others
19. Which of the following are reasons why you decided to be vaccinated against COVID-19? (Please select as many that apply)	The media information (TV/ newspaper/ website/ social media etc.)/ The information from University and Health service Center/ Practical training or club activities etc. recommends it/ Workplace recommends it/ Family member recommends it/ Friend recommends it/ Boss or professor recommends it/ You passed by the vaccination place
20. What are the main reasons you want the COVID-19 vaccine? (Please select as many that apply)	To protect you against getting COVID-19/ To protect becoming worse if you get COVID-19/ To protect sequelae if you get COVID-19/ To protect your family and friends from getting COVID-19/ You can take vaccination at University/ You can bring the vaccination ticket later (only for university person)/ You were able to get a reservation/ You can take language support or religions consideration/ Others: a free text field will appear
21. Is it difficult for you to decide to be vaccinated?	Strongly agree/ Agree/ Neither agree nor disagree/ Disagree/ Strongly disagree
22. Have you ever forced to get a vaccine?	Yes/ No/ Neither yes nor no
23. Is it difficult for you to get a true information about COVID-19?	Strong agree/ Agree/ Neither agree nor disagree/ Disagree/ Strongly disagree
24. Do you think which of the following are true information? (Please select as many that apply)	TV/ Newspaper/ Website/ Social media/ Books/ The information from university and Health Service Center (website and email)/ Family members/ Friends/ Boss or professor/ Others: a free text field will appear
25. Are you satisfied with getting vaccination?	Very satisfied/ Satisfied/ Neither satisfied nor dissatisfied/ Dissatisfied/ Very dissatisfied

The actual questionnaire using Google Forms consisted of 8 pages in total, with several questions to be answered before proceeding to the next.

Fig. 2. Questionnaire text.

Table 1. Overview of vaccination status and questionnaire at Okayama University.

		First time		Second time		Total	
All vaccinated persons		12,065		11,887		23,952	
University members		8,853	73%	8,718	73%	17,571	73%
Survey Respondents							
(University members only)		3,882 39%		3,555 36%		7,437 37%	
Sex	Male	1,980	51%	1,832	52%	3,812	51%
	Under 29	2,963	76%	2,684	75%	5,647	76%
Age	30s to 50s	859	22%	800	23%	1,659	22%
	Over 60s	60	2%	71	2%	131	2%
Country	Japan	3,606	93%	3,337	94%	6,943	93%
	Other	276	7%	218	6%	494	7%
Attribute	Student	3,006	77%	2,716	76%	5,722	77%
	Faculty	420	11%	408	11%	828	11%
	Administrative staffs	456	12%	431	12%	887	12%
Adverse reaction	Pain	2,941	76%	2,489	70%	5,430	73%
	Fever $\geq 37.5^{\circ}\text{C}$	905	23%	3,165	89%	4,070	55%

Q18 “Please choose all the activities that you think you could do right now.” When the questionnaire was created, it was expected that more people would think that “self-restraint is not necessary” after the second injection than after the first; therefore, the question was designed to make this clear.

Questions 19 through 22 were about factors that determine whether or not to vaccinate. In Q19 and Q20, respondents were asked to select from multiple options the factors that would determine whether they would receive the vaccine: information sources, external factors, and the benefits of receiving the vaccine. In Q21, respondents were asked to subjectively rate whether they had difficulty deciding to get the vaccine. There was also concern that vaccination might be forced at vaccination sites, such as universities and workplaces in Japan; thus, Q22 asked, “Have you ever been forced to get vaccinated?”

Q23, “Is it difficult for you to get a true information about COVID-19?” and Q24, “Do you think which of the following are true information?” were considered to assess information literacy. When the questionnaire was created, it was intended that those who answered that they had difficulty getting information about COVID-19 would be judged to have limited information. However, some of the respondents who answered “strongly agree” in Q23 chose “other” in Q24 and said they would refer to the websites of public institutions or articles about COVID-19, indicating that some of them found it difficult to get “true” information about COVID-19 itself in Q23. Based on this, we decided that Q23 and Q24, which contain “true” in the questions, could not be used to evaluate information literacy because they asked about the subjective thoughts of individuals.

Q25 asked, “Are you satisfied with getting vaccination?” This question was designed to ask about subjective satisfaction with the vaccine received. This question was set at the end of the questionnaire. The level of satisfac-

tion was expected to fluctuate depending on the intensity of adverse reactions to the vaccine, attitudes toward behavioral restrictions, and difficulty in obtaining information. Some people were likely satisfied with the timing of inoculations, how appointments were made, and how the venues were managed. Since there were no questions about management in the questionnaire, we could not analyze the relationship with satisfaction.

2.3. Method to Conduct the Questionnaire

A questionnaire survey was conducted among all the vaccinated persons. After vaccination, a document asking for cooperation with the questionnaire survey was distributed, and a reminder was emailed one week after the vaccination. The survey was conducted using Google Forms from July 14 to September 27, 2021, both in Japanese and English. The questionnaire items consisted of the attributes of the respondents as shown in **Table 1**, the side effects after the vaccination, the questions related to information literacy (the reason why the respondent decided to be vaccinated, the information source that the respondent considered as correct, the difficulty faced by respondents in obtaining correct information, and whether the respondent was compelled to be vaccinated), the activity that respondents considered as allowable after vaccination, and the overall satisfaction. A gift certificate for 1,000 yen was sent to a total of 100 persons selected from among all the respondents by lottery.

After the questionnaire period had passed, the data were downloaded from Google Forms, and data analysis was conducted using STATA17.

Although the questionnaire survey was conducted among all vaccinated persons, only the survey results of the students and personnel of Okayama University were analyzed using descriptive analysis.

This study was approved by the Ethical Review Board of Okayama University (Study 2110-025). Data were col-

Table 2. Comparison of current activities for students and faculty and administrative staffs.

	First time		Second time	
	Yes		Yes	
	Student (n = 3,006)	Other than students (n = 876)	Student (n = 2,716)	Other than students (n = 839)
Dinner with unvaccinated persons	1,195 39.8%	183 20.9%	798 29.4%	108 12.9%
Dinner with vaccinated persons only	1,652 55.0%	294 33.6%	1,342 49.4%	233 27.8%
Drinking with unvaccinated persons	460 15.3%	43 4.9%	238 8.8%	24 2.9%
Drinking with vaccinated persons only	907 30.2%	125 14.3%	602 22.2%	91 10.8%
Camping with friends	1278 42.5%	131 15.0%	880 32.4%	69 8.2%
Go to shopping mall	2443 81.3%	609 69.5%	1918 70.6%	454 54.1%
Go to a movie theater	2309 76.8%	428 48.9%	1819 67.0%	329 39.2%
Go to a sports club	1368 45.5%	170 19.4%	938 34.5%	119 14.2%
Karaoke or chorus with friends	727 24.2%	21 2.4%	423 15.6%	18 2.1%
Travel within the prefecture	1859 61.8%	443 50.6%	1260 46.4%	285 34.0%
Domestic (out-of-prefecture) travel	1088 36.2%	190 21.7%	602 22.2%	119 14.2%
Overseas travel	134 4.5%	25 2.9%	84 3.1%	21 2.5%
Theater watching	1088 36.2%	190 21.7%	683 25.1%	119 14.2%
None of the above	263 8.7%	154 17.6%	410 15.1%	255 30.4%

lected anonymously, and email addresses were collected as personal identifiers; however, email addresses were removed from the data during the study analysis.

3. Results

The total number of inoculations was 23,952: 12,065 for the first dose and 11,887 for the second dose; of these, 8,853 for the first dose and 8,718 for the second dose were given to students and personnel of Okayama University, and the rest to the families of Okayama University personnel and students from nearby universities and colleges (Table 1), (Fig. 1(c)). There were 3,882 persons (44%) for the first shot and 3,555 persons (41%) for the second shot from the students and personnel of Okayama University who answered the questionnaire. Males accounted for 51% of the valid answers, indicating that the sex ratio was nearly equal. The respondents were aged between 18 and 60s or older. Persons aged 18 to 20s accounted for 76% of the population, and many students were vaccinated. As for adverse reactions, pain at the vaccination site decreased from 76% in the first dose to 70% in the second dose, and fever of 37.5°C or higher increased markedly from 23% to 89% between the first and second

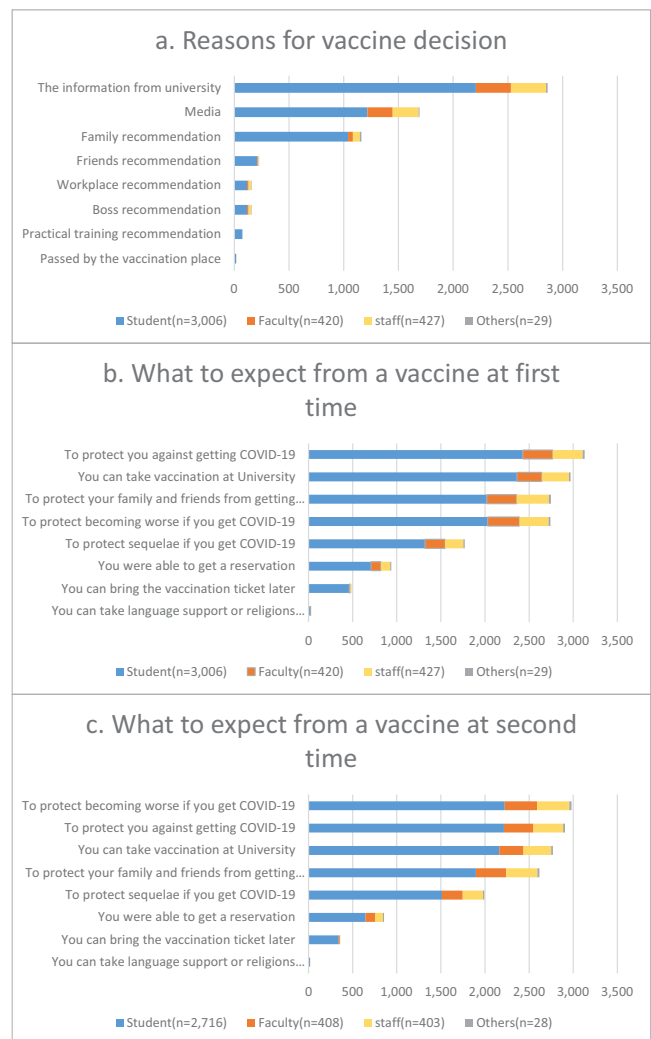


Fig. 3. Reason: (a) Results of multiple responses on reasons for vaccine decision, (b) What to expect when you decide to get the first vaccination, (c) What to expect when you decide to get the second vaccination.

doses, respectively.

Q17 and Q18 were about behavioral restrictions to prevent COVID-19 infection. Table 2 shows the results for Q18. The percentage of respondents who answered “yes” about activities they would be willing to engage in decreased after the second dose compared to the first dose for all options. In Q17, more people answered that they needed a mask after the second vaccination than after the first vaccination for both options.

The factors for the inoculation of Q19 and Q20 are shown in Fig. 3. In Q19, only the results for the first injection are shown because the same trend was observed for both the first and second injections. The most common reason for wanting to get the vaccine was “information from the university and health service center,” followed by “media” and “recommendation from family” (Fig. 3(a)). In Q20, the most common reasons for deciding to get vaccinated the first time were “to protect you against getting

COVID-19,” “to be able to obtain the vaccine at the university,” “to protect your family and friends from getting COVID-19,” and “to protect becoming worse if you get COVID-19.” However, “to protect becoming worse if you get COVID-19” was the most common reason for the second vaccination (Figs. 3(b), (c)). In Q21, the percentage of respondents who answered that it was “very difficult” or “difficult” to decide whether or not to get the vaccine decreased from 25.0% after the first injection to 21.7% after the second one. Of the 74 respondents who answered “Forced to get vaccinated” in Q22, the most common reason for deciding to get vaccinated was “Recommendation from family,” indicating that a certain number of people decided to get vaccinated because of a strong recommendation from their family.

Regarding Q23, “Difficulty in getting true information,” 2,165 respondents (55.8%) answered with “strongly agree” or “agree,” while 1,021 (26.2%) answered “strongly disagree” or “disagree.” More than half of the respondents answered that it was difficult to obtain accurate information. When asked about the satisfaction level in Q25, 77% of the respondents answered “very satisfied” or “satisfied” after the first vaccination and 80% after the second vaccination. However, 1.5% of the respondents answered “very dissatisfied” or “dissatisfied” after the first vaccination and 1.7% after the second vaccination. (Figs. 4(a), (b)).

We also determined that a certain number of respondents decided to get vaccinated because of strong family pressure (Fig. 4(c)).

4. Discussion

In Okayama City, COVID-19 vaccination for residents aged ≤ 39 years began at the end of August 2021 [11]. Many students could be vaccinated earlier by selecting the COVID-19 vaccination at the university than those in the municipalities, which would also result in high satisfaction in the survey. Many of the 40+ year-old personnel of the university had already been vaccinated outside the university. Thus, the actual number of vaccinated persons was thought to be slightly higher than the survey results.

Many students at Okayama University are familiar with the COVID-19 vaccination venue, located on the first floor of the building, which means high accessibility for the users. Regarding the respondents’ decision to be vaccinated, information from the university and the health service center was selected as the most frequent reason. Additionally, the information provided for vaccination via email, including the message from the university president and the simple online reservation system, leads to a high number of vaccinations and high satisfaction.

According to the survey results, many respondents referred to information from the media when deciding to be vaccinated. However, regarding the accuracy of the information, many did not think that the information from SNS was correct compared to television, newspapers, and websites. They recognized that more information circulated

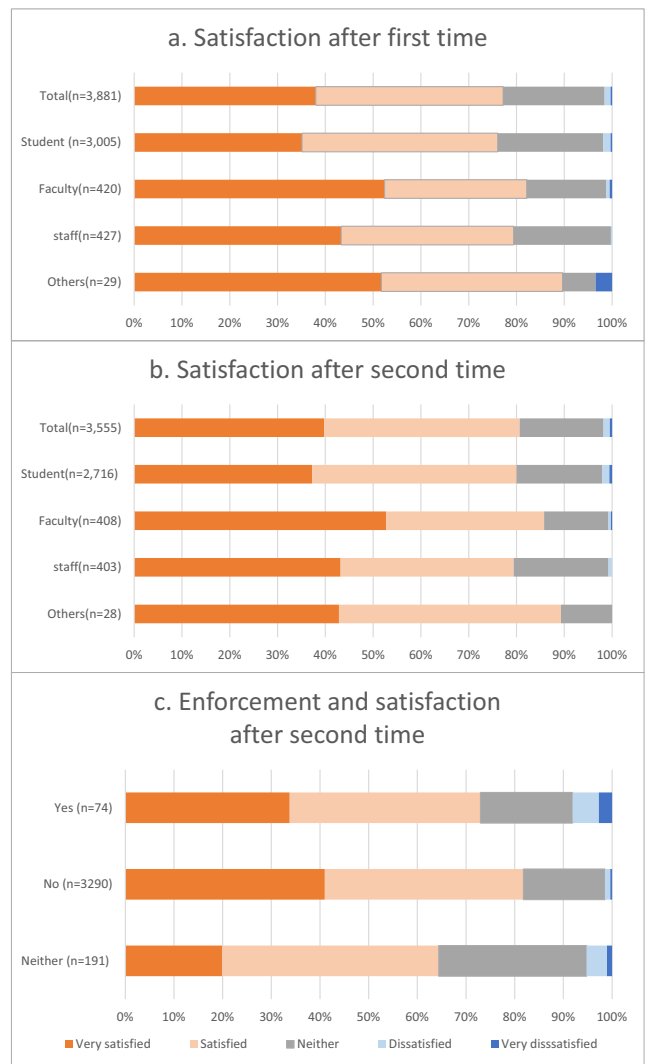


Fig. 4. Satisfaction: (a) Satisfaction after the first vaccination for each attribute, (b) Satisfaction after the second vaccination for each attribute, (c) Comparison of satisfaction with and without enforcement after the second vaccination.

through SNSs incites demagogy and anxiety [12, 13]. It was believed that vaccinated persons would behave based on high information literacy, such as selection of information sources and choice of content [14, 15]. Many of the respondents in their 20s or younger answered “Family recommendation” as the third highest reason to get vaccinated. Especially for the young, it was also important that their parents were involved in their decisions to be vaccinated.

The increase in the number of respondents who chose “to protect becoming worse if you get COVID-19” when comparing the first and second vaccination in their answers to Q20 can be attributed to the fact that although a certain number of people become infected with COVID-19 after vaccination, the rate of serious illness and death is low [16–18]. In addition, many students answered “recommendation from family” as the reason for deciding to get vaccinated, so it is also important

to have parental involvement in vaccinating, especially among young people.

In response to Q18 that inquired about what activities are currently allowed, we found it surprising that the percentage of those who answered that activities should be restricted increased after the second vaccination compared to after the first vaccination. However, the results seem to be influenced mainly by the fact that in August 2021, when the second dose of the vaccine was administered, COVID-19 infection had spread significantly in Japan (Figs. 1(a)–(c)), and it was often reported that there was still a risk of infection even after completing both doses [19,20]. From the above, it was also anticipated that vaccinated persons would have high information literacy.

Regarding the satisfaction level, approximately 1.5% of respondents answered “very dissatisfied” or “dissatisfied,” and there was a tendency for satisfaction to be higher after the second dose than the first. As shown in Table 1, more people had fever after the second vaccination than after the first. As shown in Table 2, many people thought that the restrictions on their activities could not be alleviated due to the worsening of the infection situation even after the vaccination was completed. Despite this, many respondents were satisfied with the vaccines they received. However, the survey did not sufficiently examine whether the satisfaction level among vaccinees was due to the operation of the vaccination program at the university and the reservation system or due to a sense of security resulting from the increased effectiveness of the two-dose vaccination in preventing infectious diseases and serious illnesses.

This study had several limitations. First, because the questionnaire survey was limited to vaccinated persons, it cannot be determined why unvaccinated persons have not been vaccinated and what information source they rely on. Second, this study only covers university members, who have a relatively high educational background and information literacy; this might not reflect the overall perceptions of the young population in Japan. Third, we could not ask about respondents’ information literacy in this survey. Therefore, we could not directly examine the relationship between information literacy and vaccination; thus, future research is required. This study is relevant to the literature because our results showed a detailed examination of adverse reactions, and we used a questionnaire to determine the factors that led to the respondents’ decision to be vaccinated. Additionally, the satisfaction level in a group of Japanese people with an almost 50–50 sex ratio, including many young people, was also recognized. After the compilation of the questionnaire results, the adverse reactions’ section was promptly announced to the press as survey results at Okayama University [21, 22].

5. Conclusion

This study reports the impact of vaccination against COVID-19 mainly among the young population and a de-

tailed analysis of survey results on satisfaction after vaccination. In the group where the male to female ratio was almost 50/50 and > 75% were in their 20s or younger, there was a marked increase in fever of $\geq 37.5^{\circ}\text{C}$ when comparing the first and second injections. Yet, satisfaction with COVID-19 vaccination tended to increase. To promote the vaccination of young people in the future, we suggest improving information literacy. Activities such as the repeated provision of information through the media, non-coercive vaccination recommendations from locations close to the vaccinated, and accurate provision of information in response to incorrect information should be considered.

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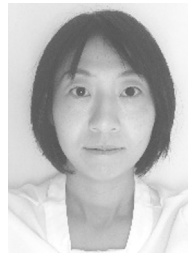
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Selected Publications:

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- "Breastfeeding and risk of food allergy: A nationwide birth cohort in Japan," *Allergy Int.*, Vol.69, No.1, pp. 91-97, 2020.
- "Trajectory of body mass index and height changes from childhood to adolescence: a nationwide birth cohort in Japan," *Sci Rep.*, Vol.11, No.1, Article No.23004, 2021.

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Selected Publications:

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- "Limitation of combination therapy of interferon and ribavirin for older patients with chronic hepatitis C," *Hepatology*, Vol.43, pp. 54-63, 2006.
- "Roles of alcohol consumption in fatty liver: A longitudinal study," *J. Hepatol.*, Vol.62, pp. 921-927, 2015.

Academic Societies & Scientific Organizations:

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Selected Publications:
• T. Yorifuji, T. Tsuda, and M. Harada, "Minamata disease: a challenge for democracy and justice," "Late lessons from early warnings: science, precaution, innovation," pp. 92-120, EEA Report, European Environment Agency, 2013.

• "Outdoor Air Pollution," IARC Monographs Volume 109, IARC Working Group on the Evaluation of Carcinogenic Risks to Humans, International Agency for Research on Cancer, 2016.

Academic Societies & Scientific Organizations:

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- Y. Ariyoshi, M. Watanabe, S. Eikawa, C. Yamazaki, T. Sadahira, T. Hirata, M. Araki, S. Ebara, Y. Nasu, H. Udono, and H. Kumon, "The induction of antigen-specific CTL by in situ Ad-REIC gene therapy," Gene. Ther., Vol.23, No.5, pp. 408-414, 2016.

Academic Societies & Scientific Organizations:

- Japanese Urological Association (JUA)
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Selected Publications:

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• N. Terami, D. Ogawa, H. Tachibana, T. Hatanaka, J. Wada, A. Nakatsuka, J. Eguchi, C. S. Horiguchi, N. Nishii, H. Yamada, K. Takei, and H. Makino, "Long-term treatment with the sodium glucose cotransporter 2 inhibitor, dapagliflozin, ameliorates glucose homeostasis and diabetic nephropathy in db/db mice," *PLoS One*, Vol.9, e100777, 2014.

• D. de Zeeuw, B. Coll, D. Andress, J. J. Brennan, H. Tang, M. Houser, R. Correa-Rotter, D. Kohan, H. J. L. Heerspink, H. Makino, V. Perkovic, Y. Pritchett, G. Remuzzi, S. W. Tobe, R. Toto, G. Viberti, and H. H. Parving, "The endothelin antagonist atrasentan lowers residual albuminuria in patients with type 2 diabetic nephropathy," *J. Am. Soc. Nephrol.*, Vol.25, No.5, pp. 1083-1093, 2014.

• J. Wada and H. Makino, "Innate immunity in diabetes and diabetic nephropathy," *Nat. Rev. Nephrol.*, Vol.12, No.1, pp. 13-26, 2016.

Academic Societies & Scientific Organizations:

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