



UNIVERSITY HEALTH SCIENCE EDUCATION DURING THE SEVERE ACUTE RESPIRATORY SYNDROME CORONAVIRUS₂ OUTBREAK

Kanae Watanabe

Kanagawa University, Yokohama, Japan

Corresponding Email: ft101963cq@kanagawa-u.ac.jp

Abstract

Due to the spread of the severe acute respiratory syndrome, Coronavirus 2 (COVID-19), the start of a new university semester was delayed. Additionally, all lectures are being delivered remotely, as students are not allowed to visit campus until the end of the semester. Freshmen students, in particular, feel considerable anxiety about both their studies and health. In Japan, students study health science from preschool to elementary and secondary education. Therefore, this study aimed to identify any contribution of education on students' ability to cope with an emergency, such as the spread of COVID-19. If no contribution was found, we wanted to understand the reasons and what type of education should be provided at university. To this end, we administered a questionnaire to freshmen during the outbreak of COVID-19, and almost all students reported an insufficient study of infections before secondary education. Prior to COVID-19, students wanted to study longevity and nutrition. However, during the outbreak, students were concerned with COVID-19, as they could not recollect having studied infections until secondary education. Moreover, inconsistent information from the World Health Organization, governments, and the media has added to students' confusion. Our findings suggest that education at university should provide accurate information to students and promote their health literacy skills.

Keywords: anxiety, COVID-19, health science education, university students

1. Introduction

Owing to the COVID-19 pandemic of 2020, everything has become unusual. As for colleges and universities, campuses were closed, and the new semester started more than one month late. Students registered for courses via the internet and all lessons were conducted remotely. Freshmen, who had no knowledge or experience of campus life, might have felt anxious and had more trouble. In Japan, students study health sciences from preschool through secondary education. However, we do not know how prior education has contributed to students' ability to cope with infection. Therefore, this study aimed to identify students' specific anxieties and troubles and determine what type of education should be provided at the university level, particularly in health science education, to promote students' ability to cope with an emergency, such as the COVID-19 pandemic. Adding that, for giving the adequate support to students especially freshmen who were not to used campus life, knowing anxiety and trouble which they faced was important purpose of this research.

2. Method

Our qualitative interpretative design used a descriptive questionnaire to survey 87 freshmen university students. Data were analyzed using Braun and Clarke's framework for thematic analysis (Braun and Clarke, 2006).

Questionnaires included the following questions:

1. What did you study concerning infections in elementary and secondary school?
2. What is your main source of news about COVID-19?
3. Did you feel anxiety or have problems concerning COVID-19?
- 4-1. What do you want to know about COVID-19 that you do not already know?
- 4-2. Do you want to know more about COVID-19?
- 5-1. Did you feel anxiety or have trouble before entering the university?
- 5-2. Did you feel anxiety or have trouble after entering the university?
6. What do you want to tell society and/or citizens concerning COVID-19?
7. What do you want to tell the Japanese government concerning COVID-19?
8. What do you want to tell the World Health Organization (WHO) concerning COVID-19?
9. What do you want to tell hospitals and medical or public health personnel?
10. What do you want to tell mass communications?
11. Free comments concerned with COVID-19:

This research was approved by the Ethics Committee of Kanagawa University, receipt number 2020-4, and complies with ethics guidelines of the Japanese Society of Physical Education Health and Sports Science for researchers.

3. Results

3. 1 Studying infection in preschools, elementary and secondary schools

The most common answer to the first question was handwashing and gargling, which were taught like set phrases for infection prevention in preschools and elementary schools. Wearing a mask was taught for infection prevention in elementary schools. (Elementary school textbook 3-4, 2018) Well-regulated life is taught as a basis for general health and preventing lifestyle-related disease in elementary and secondary schools (Elementary school textbook 5-6, 2018, Junior high school textbook, 2018, High school textbook, 2017) but is not directly related to infection. Many students answered that they did not learn about infections. It is difficult to judge whether they studied this material and may have forgotten. However, at least, students did not recognize that handwashing is fundamental and the most important practice to learn for infection prevention.

Table 1: Study of infection in preschools, elementary and secondary schools

Rank	Answer	Total answers
58	1	handwashing, gargling
25	2	wearing a mask

19	3	well-regulated life (exercise, nutrition)
15	4	studied nothing concerning infection

3. 2 Students' news sources on COVID-19

Students reported that their major news source concerning COVID-19 was family, friends, and acquaintances with whom they can talk freely. Current students are familiar with social networking sites (SNS) through mobile phones. However, SNS were not students' primary news source for information on COVID-19. Additionally, newspapers were referenced much more often than TV as news sources.

Table 2: Students' news sources on COVID-19

Rank	Answer	Total answers
53	1	family, friends, acquaintances
48	2	newspapers
18	3	TV
7	4	SNS

3. 3 Students' anxiety and other problems concerning COVID-19

Students mostly reported anxiety and concerns with campus life. They wanted to know when they could return to campus. First, they were extremely anxious about remote lessons, with which they were not familiar. They were particularly nervous about receiving necessary information on course registration and the acquisition of credits. Second, they were anxious about the infection: the risk of their infection and that of family or loved ones. They were anxious about when the pandemic would be over, and whether things would return to normal. Additionally, they were experiencing trouble over not being able to meet people whom they wished to see or go where they wanted.

Table 3: Students' anxiety and other problems concerning COVID-19

Rank	Answer	Total answers
41	1	campus life
37	2	risk of infection
28	3	pandemic's end
26	4	social restrictions

3. 4 What students' want to know about COVID-19

Students reported wanting to know about the risk of COVID-19 infection, its symptoms, infection prevention, the number of patients in their immediate area, the infection route, the collapse of the medical system, and so on. They likely received some information on these topics daily, but they wanted to know more. Moreover, some had doubts about the reliability of information provided by the governments of other countries, WHO, and even the Japanese government.

Table 4: What students' want to know about COVID-19

Answer _____	Total answers		
	because they Do not know	they want to know more	total
risk of infection, symptoms, prevention, patients in their living area, infection routes, medical system collapse, etc.	14	39	53
when pandemic will end, when things will return to normal	23	6	29
medicine, vaccine	16	8	24
where and why the virus started, why pandemic could not be prevented, etc.	8	6	14
information could be unreliable	11	7	18

3. 5 Students' anxiety and troubles concerning campus life

Students mostly reported anxiety and concerns with campus life was lessons. Before entering the university, students wondered when lessons would start and, in the first place lessons, would be conducted. After entering the university, many students had serious anxiety and trouble about remote lessons which they were not been used to. As for mental issues, they felt strong unease that they would not make friends and not construct human relation. They could not come to campus and could not meet university persons nor other students; that frustrated them loneliness and anxiety. Students other serious anxiety and trouble was concerned with IT utilization for administrative works (i.e. course registration) and accessing important and necessary information. It caused from lack of information literacy.

Table 5: Students' anxiety and troubles concerning campus life

Answer	Total answers	
	before entering	after entering
	univ.	univ.
when lessons would start; what lessons will consist of	16	0
remote lessons	39	86
human relationships, making friends	25	9
course registration	18	2
from whom or where they could get information,	7	6
whether they had received all necessary information yet		

3. 6 What students wanted to tell society and citizens

The most common answer given by students as to what they wished to tell society and their fellow citizens were to maintain etiquette and good manners to prevent the spread of infection and make the pandemic end—for example, wearing a mask, coughing etiquette, refraining from nonessential and non-urgent outings, etc. The second most given answer involved doing things that would contribute to preventing infection spread and bringing the pandemic to an end: for example, promoting telework and solving crowding issues on the train. The third most popular answer was about preventing behavior that would make persons feel stressed and/or panic.

Table 6: Students' anxiety and troubles concerning COVID-19

Total answers	Rank	Answer
20	1	wearing a mask, cough etiquette, refraining from nonessential outings
19	2	promote telework, preventing crowded trains
11	3	appropriate behaviors: i.e., not hoarding, not bothering shop staff, etc.

3. 7 What students wanted to tell the government

Most students wanted statement to tell the Japanese government that everything was done too late. If the government had banned entry into Japan, released the state of emergency, and supported efforts much earlier, the situation would not have reached the current level. The second most given answer concerned the state of emergency. Students thought it was incomplete and given too late and that its standards were unclear (children's play areas were closed, but pachinko [Japanese slot machine] parlors were open; schools were closed, but child care centers were open; etc.). One of the third most concerns were actually needed support. The government's current support was so insufficient and late. Companies, citizens and students were facing economic crisis and needed quick and efficient financial support.

Table 7: What students wanted to tell the government

Rank	Answer	Total
1	action taken too late	23
2	concerned with the state of emergency	20
3	supporting policy needs	19
	economic support for people, companies	19

3. 8 What students wanted to tell the WHO

Most students believed that the World Health Organization (WHO) should have taken precautionary measures much earlier: for example, alerting the world about the danger of COVID-19, declaring the pandemic, and researching COVID-19 in Wuhan, China. Second, students wished to convey to the WHO that they should never show an inappropriate attitude: for example, colluding with or excluding a specific country, being opposed to a specific country, etc. Students wanted the WHO to contribute to worldwide cooperation and promote research investigating the causes and conditions of COVID-19's introduction in Wuhan, China and its imminent global spread. Further, they want the WHO to contribute to ending the pandemic and preventing recurrence. The third most given statement was regret over the WHO releasing inappropriate and/or inaccurate information and creating confusion. For example, especially in the early stages, the WHO dwarfed the risk of novel coronavirus, failed to inform the world that the virus was born in Wuhan, China, stated that masks provided no protections, and downgraded the situation as less than a pandemic. These inappropriate, unfair attitudes and proclamations made the COVID-19 pandemic even worse.

Table 8: What students wanted to tell the WHO

Rank	Answer	Total answers
1	should have taken measures much earlier	17
2	should never take inappropriate action or promote unfair attitudes	16
3	negativity over releasing inappropriate and/or inaccurate information, creating confusion	14

3. 9 What students wanted to tell hospitals and medical or public health staff

The most expressed sentiment from students toward hospitals and medical or public health staff was appreciation. Medical and public health staff were working extremely hard and were at risk of infection. It was a pity that they could not see their families because of the infection risk. Students cheered those individuals and said to take care of themselves to prevent overworking and infection. The second most popular statement concerned increasing testing sites (i.e. PCR test) and accepting more patients. Many people who wanted to have a PCR test in Japan could not get it done. To ease anxiety and avoid crowding at test sites, increasing the number of testing sites was deemed necessary. Moreover, some patients were ordered to stay home because of a lack of hospital capacity and had died. Third, students were concerned with preventing

nosocomial infection. Unfortunately, COVID-19 clusters were cured in some hospitals. Those hospitals should close, and this was terribly disadvantageous for patients and society.

Table 9: What students wanted to tell hospitals and medical or public health staff

Rank	Answer	Total answers
57	1	appreciation, pleas for self-care
27	2	increased testing sites (PCR), accepting more patients
16	3	preventing nosocomial infection

3. 10 What students wanted to say to mass communications

The students most wished to tell sources of mass communication to report true, objective coverage and never spread false information. At times, media reports made people feel anxious and confused by inadequate information and/or unnecessary sensational expression. Additionally, students were afraid that media personnel would become spreaders of the virus because they were more likely to have contact with sources of infection while covering related stories.

Table 10: What students wanted to tell media outlets

Rank	Answer	Total answers
41	1	report true, objective coverage, never spread false information
6	2	refrain from sensational media coverage, do not incite unrest
6	3	be careful of infection when working

3. 11 Free comments concerned with COVID-19

The most commonly given ideas given by students as free comments concerned their desire for the pandemic to end for things to return to normal, and to visit the university campus as soon as possible. Second were messages of solidarity, or that 'we shall we get through this together' by cooperating and combining efforts. Finally, many messages offered continued appreciation to medical and public health personnel. It would be beautiful attitude of Japanese that instead of complaining, blaming or revolting, having and showing morality and affable behavior and appreciating to contributors. Survivors of the Great East Japan Earthquake of 2011 showed similar attitudes (Ahr, 2014).

Table 11: Free comments

	Rank	Answer
Total answers		
29	1	students wanted pandemic to end, things to return to normal, to go to university as soon as possible.
17	2	get through this together, cooperate, and combine efforts
6	3	thanks for medical & public health personnel

4. Discussion

During the COVID-19 situation, students focused their attention on preventing the spread of infection. Before COVID-19 (November 2019; unpublished), students' attention was focused on healthy longevity and diet (reducing weight). However, although the subjects of interest were different, students commonly believed the health literacy skills learned in primary school were insufficient. For healthy longevity and diet, students study lifestyles (i.e. exercise, nutrition, relaxation) and the immune system during preschool, primary, and secondary education. Students sought information but did not have the necessary skills to access the newest information or to judge whether this information was reliable. Concerns over COVID-19 were the same; students learned fundamental facts about preventing the spread of infection (i.e., handwashing and wearing a mask) in primary education but did not recognize the importance or effectiveness sufficiently. Further, it was difficult for students to access reliable information proactively and to judge whether the information they got passively was reliable.

Not only should reminders of lessons from preschool and elementary education be offered in health science education at the university level, but such lessons should also promote recognizing the importance of such lessons. For preschool and elementary school students, it would be sufficient to teach students how to wash their hands properly and that the purpose of handwashing is to wash away germs. In health science education at colleges and universities, theoretical backgrounds for lessons learned in preschool, primary, and secondary schools should be taught with the goal of summing up previous learning:

1) Why handwashing with soap prevents infection

Corona virus is an envelope virus, and soap can remove oils acting as a fence for the virus.

Touching the mouth and/or nose with hands coming into contact with the virus can cause infection.

Skin provides a barrier function, so virus attaching to the hands only would not cause infection. Using these dirty hands to touch the mouth/nose will cause infection.

2) Why wearing masks can prevent infectious spread

The virus can pass through a mask; however, they do prevent the spread of the virus by coughing and sneezing if one is already infected.

Wearing a mask correctly can protect one from infection from water droplets (saliva with virus).

It has been said that Japanese health literacy is low (Nakayama et.al., 2015), and we confirmed that our students' health literacy level was low, too. Especially, health information utilization skills should be studied during university education.

Determinates of health are diverse, and the effects of social determination of health are immense (WHO, 2003). One major anxiety for freshmen university students was the lack of human relationships and, as such, they wanted someone to talk to. Therefore, offering a system to talk with university personnel would be helpful. Teachers and administrators may be extremely busy to talk to freshmen; therefore, the senior student advisory system via phone or audio Skype would be useful. The personal information of all students should be protected, and school counselors can intervene when needed. Paying senior advisory students can also help if their financial condition has been affected by the COVID-19 pandemic.

Students asked social and mass communication to avoid panicking and creating panic. However, they did not know how to do so. Providing accurate information to students, teaching appropriate behaviors, and advising them on how to avoid panic should be taught in university education.

Many students' descriptions were affectional and emotional, but were sometimes short on specifics. In order for the Japanese to maintain positive mental and physical attitudes, like morality and affable behavior and appreciation, students should learn how to express their concerns concretely and reasonably and stop conjecturing about others, especially concerning health and life.

Not only for personal health, but also for the well-being of students while on campus and for the rest of their lives, students should be afforded more access to information and increased literacy skills. Many students were anxious and had trouble with information utilization. There are information study classes at this university, but the curriculum should be updated to increase literacy.

References

- i. Ahr K., 2014, *How Japan Defends Itself: Facing the Power Shifts in East Asia*, vdf Hochschulverlag AG, an der ETH Zurich, 92.
- ii. Braun V., Clarke V., 2006, Using thematic analysis in psychology, *Qualitative Research in Psychology*, 3(2), 77-101.
- iii. Elementary school 3-4 grade students' health education textbook, approved by the Ministry of Education, Japan, 2018, *Health for All 3-4* (in Japanese).
- iv. Elementary school 5-6 grade students' health education textbook, approved by the Ministry of Education, Japan, 2018, *Health for All 5-6* (in Japanese).
- v. High school students' health and physical education textbook, approved by the Ministry of Education, Japan, 2017, *Current High Health and Sports*, (in Japanese).
- vi. Junior high school students' health and physical education textbook, approved by the Ministry of Education, Japan, 2018, *New Junior High Health and Sports* (in Japanese).
- vii. Nakayama K., Osaka W., Togari T., Ishikawa H., Yonekura Y., Sekido A., Matsumoto M. 2015, Comprehensive health literacy in Japan is lower than in Europe: a validated Japanese-language assessment of health literacy. *BMC Public Health*, 15(1), 505.
- viii. World Health Organization, 2003, Edit: Richard Wilkinson E., Marmot M, *Social Determinants of Health: The Solid Facts*. 2nd edition, 31.