

Supplementary Table S1. Motivating factors, coding analysis of Group 2020.

Coding Label	Explanation	Example Sentence	Women (N=24) N (%)	Men (N=12) N (%)	Total (N=36) N (%)	Comparison by sex <i>P</i> (Effect size)
<i>Save[†]</i>	Protect, help, benefit, save lives / people / the world (through medical science)	"I strongly felt that there is a need for medical science in society and that what I am learning will greatly help save lives."	12 (50)	8 (66.8)	20 (55.5)	0.343 (0.478)
<i>Knowledge[†]</i>	Frustrated by lack of knowledge / want to increase knowledge / skills / deepen understanding, responsibility / opportunity to study	"A few days ago, I was asked about medical terms. For example, the PCR test and the coronavirus and so on. However, I couldn't answer these questions completely. I didn't have enough knowledge. I was so frustrated by my lack of knowledges despite studying medical science."	13 (54.1)	5 (41.6)	18 (50)	0.48 (0.41)
<i>Heroes[†]</i>	Recognized the importance of / respect for / feel proud of medical scientists / health care workers, heroes	"I believe that medical scientists will be heroes which eradicate COVID19 to protect people all over the world."	12 (50)	5 (41.6)	17 (47.2)	0.732 (0.288)
<i>Truth[†]</i>	Importance of having / collecting / disseminating correct information / knowledge	"We can save the world by getting the right information out there. With this COVID19 pandemic, there was a lot of information about the COVID19 flying around. People were confused as to which was the correct information. By disseminating the right information, we can prevent the spread of infection."	9 (37.5)	4 (33.3)	13 (36.1)	0.553 (0.385)
<i>Mission[†]</i>	Pandemic made me think about life / medicine / medical science / gave a sense of mission, responsibility	"COVID19 steals our daily life and this can't be ignored. Many people want the solution that protects themselves. Personally, in this situation, I feel that I have to solve this problem like the mission."	10 (41.6)	2 (16.6)	12 (33.3)	0.13 (0.595)
<i>Contribute[†]</i>	Contribute to / play my part in the development of medicine, medical science / improve COVID testing	"I think I should contribute to medical science as a medical science student in the future. Moreover, I especially want to contribute to making a new medicine in the future."	5 (20.8)	6 (50)	11 (30.5)	0.073* (0.646)
<i>Vaccine[†]</i>	No vaccine/cure has been found/want to create a vaccine/cure	"If I study medical science, I will be able to develop a cure or a vaccine as a Medical scientist."	6 (25)	3 (25)	9 (25)	0.61 (0.358)
<i>Skills[†]</i>	Impressed that medical technologists' skill (PCR testing) is contributing to COVID prevention	"Through the pandemic of COVID-19, I heard that medical scientists involve in PCR tests and help a lot of patients, so I felt that the job of medical scientists is attractive. Therefore, I was influenced by the COVID-19 and became more interested in becoming a medical scientist."	3 (12.5)	3 (25)	6 (16.6)	0.309 (0.494)

<i>Solution</i>	Find solution for the pandemic / a future pandemic	"If I continue studying medical science in my college, I may find some kind of solution for the next pandemic. So, I feel like the pandemic improve my motivation to study medical science."	4 (16.6)	1 (8.3)	5 (13.8)	0.451 (0.444)
<i>Link[†]</i>	Saw a link between pandemic and my studies	"I felt the link between what I learned and what is happening."	1 (4.1)	3 (25)	4 (11.1)	0.098 (0.621)
<i>Research[†]</i>	Became interested in medical science / virology / infection biology / new research fields	"After experiencing the current situation, I became interested in research."	1 (4.1)	1 (8.3)	2 (5.5)	0.55 (0.387)
<i>Online Good</i>	Online classes are good / have benefits / less commuting time	"I am able to make good use of my time because of online lectures."	0 (0)	2 (16.6)	2 (5.5)	0.105 (0.615)
<i>Vision[†]</i>	Can visualize/have an image of the work of a medical technologist / vision for the future	"I got to catch the image of medical technologist."	0 (0)	1 (8.3)	1 (2.7)	0.324 (0.487)
<i>Success[†]</i>	Achieve success	"I feel the need to study harder to succeed as a medical researcher."	1 (4.1)	0 (0)	1 (2.7)	0.676 (0.323)
<i>Developing Countries[†]</i>	Want to contribute to those in developing countries	"My dream is to provide medical assistance to least developed countries."	1 (4.1)	0 (0)	1 (2.7)	0.676 (0.323)
<i>Challenges[†]</i>	Become a person who stands up to challenges	"Through this COVID19 pandemic, I strongly want to be a medical technologist that stands up to the challenge of even the most difficult situations."	1 (4.1)	0 (0)	1 (2.7)	0.676 (0.323)
<i>Career[†]</i>	Medical science work offers a stable future / will be needed more in the future	"Thanks to COVID19, pathogenic microbiology is possibly the area of research that people are most interested in right now. If this happens to continue, being a medical researcher would be a stable option for my future. This is how the pandemic has made me more optimistic about studying medical science."	1 (4.1)	0 (0)	1 (2.7)	0.676 (0.323)

[†]Indicates medical science-specific coding labels

*Indicates statistically significant P-values

Supplementary Table S2. Demotivating factors, coding analysis of Group 2020.

Coding Label	Explanation	Example Sentence	Women (N=24) N (%)	Men (N=12) N (%)	Total (N=36) N (%)	Comparison by sex <i>P</i> (Effect size)
<i>Lonely</i>	Feeling lonely / can't meet friends / family	"I feel loneliness in my house every day because I can't talk with friends directly, study with them and go to anywhere.	1 (4.1)	3 (25)	4 (11.1)	0.35 (0.47)
<i>Discrimination[†]</i>	Demotivated / angry about by discriminatory attitudes towards patients and doctors	"I am very reluctant to see medical professionals discriminated against because of COVID-19 pandemic, and I am very afraid of this kind of fact."	2 (8.3)	1 (8.3)	3 (8.3)	0.098 (0.621)
<i>No Experiments[†]</i>	Demotivated to study because cannot do experiments / practical training / develop skills	"We cannot do some experiments at the college."	2 (8.3)	1 (8.3)	3 (8.3)	0.704 (0.306)
<i>Online Bad</i>	Online Classes / lectures are boring / bad / have more disadvantages than advantages	"Online learning has more disadvantages than advantages. First, it's stress that I don't meet my friends and teachers. Second, the things we can get is less than those of face-to-face classes. Third, my eyes and ears have a heavy burden."	1 (4.1)	2 (16.6)	3 (8.3)	0.704 (0.306)
<i>Government</i>	Demotivated / frustrated by government response	"My motivation to study decreased because of the government's delay in dealing with health care workers."	2 (8.3)	0 (0)	2 (5.5)	0.253 (0.521)
<i>Robbed</i>	COVID robs me of my time / memories / good times	"COVID19 has taken much time from us. Especially, our chances to go out and the memories that we make are reduced."	1 (4.1)	1 (8.3)	2 (5.5)	0.45 (0.431)
<i>Screens</i>	Tired of looking at the screen	"I can't go to university, and have to take online lessons. I'm too tired to watch a desktop screen all the day."	1 (4.1)	1 (8.3)	2 (5.5)	0.55 (0.387)
<i>Being Home</i>	Slacked off / boring / obstacles at home	"The spread of coronaviruses has plagued people around the world with anxiety and fear, causing various obstacles at home"	1 (4.1)	0 (0)	1 (2.7)	0.55 (0.387)

[†]Indicates medical science-specific coding labels

*Indicates statistically significant P-values

Supplementary Table S3. Motivating factors, coding analysis of Group 2021.

Coding Label	Explanation	Example Sentence	Women (N=25) N (%)	Men (N=12) N (%)	Total (N=37) N (%)	Comparison by sex <i>P</i> (Effect size)
<i>Save[†]</i>	Protect, help, benefit, save lives / people / the world (through medical science)	"Through the pandemic, I felt that the medical science I was studying could save lives."	8 (32)	3 (25)	11 (29.7)	0.487 (0.409)
<i>Truth[†]</i>	Importance of having / collecting / disseminating correct information / knowledge	"We are in the midst of a pandemic in the Internet age, a situation of unprecedented information overload, and it is important to be able to discern what is correct and what is fake."	6 (24)	3 (25)	9 (24.3)	0.624 (0.346)
<i>Research[†]</i>	Became interested in medical science / virology / infection biology / new research fields	"I started to take a new interest in research fields related to COVID-19. Until now, I was not very interested in the fields of virology and drug discovery, but I became interested in this situation."	5 (20)	4 (33.3)	9 (24.3)	0.311 (0.486)
<i>Value of Studies[†]</i>	Saw the value / meaning / importance / duty of medical science studies	"Through the pandemic, I felt that the medical science I was studying could save lives. As a result, I realized that the medical science was useful, and motivated me to study."	6 (24)	3 (25)	9 (24.3)	0.624 (0.346)
<i>Contribute[†]</i>	Contribute to / play my part in / the development of medicine, medical science / improve COVID testing	"If I can do research to overcome a pandemic, I can contribute to the medical field. As a medical science student, I want to be a useful person, and I am studying with high motivation."	5 (20)	2 (16.6)	7 (18.9)	0.594 (0.361)
<i>Communication</i>	Realized the importance of communicating / relationships with friends	"This situation of pandemic taught me that the communication gives us the meaning of study and motivation."	4 (16)	2 (16.6)	6 (16.2)	0.65 (0.333)
<i>Protection[†]</i>	Realized the importance of protecting myself / doing what I can to curb the pandemic	"I think our individual actions can curb infection, so we should focus our attention on the topic of COVID-19 and take action."	3 (12)	2 (16.6)	5 (13.5)	0.53 (0.390)
<i>Link[†]</i>	Saw a link between pandemic and my studies	"When studying medical science, the examples related to the current situation are very helpful. For instance, today the COVID-19 vaccine is a hot topic in the world and now I'm studying microbiology, so I can learn action mechanism of vaccine with very familiar examples."	4 (16)	0 (0)	4 (10.8)	0.192 (0.546)
<i>Time</i>	Had time to reflect on my future	"I had more time to be alone during the self-restraint period, so I could spend enough time facing myself. At that time, I began to think about the	2 (8)	1 (8.3)	3 (8.1)	0.704 (0.302)

		future and it made me more motivated to study medical science.”				
<i>Media Good</i>	Watching the news/TV about COVID/medical field	“In the mass media, such as television, I have more opportunities to see the actual medical field, and I was more motivated to study.”	3 (12)	0 (0)	3 (8.1)	0.296 (0.493)
<i>Heroes[†]</i>	Recognized the importance of/respect for/feel proud of medical scientists/health care workers, heroes	“COVID-19 makes me feel more thankful to health care professionals and motivated to study medical science.”	3 (12)	0 (0)	3 (8.1)	0.296 (0.493)
<i>Innovation[†]</i>	Impressed by advances in medical technology/vaccines	“I had always understood that medical technology was advancing day by day, but I was reminded of how amazing it was.”	0 (0)	3 (25)	3 (8.1)	0.046* (0.673)
<i>In-person Classes</i>	More face-to-face classes/in-person activities has increased motivation	“Recently, the number of face-to-face classes has increased little by little, and I made new friends of university, so I have been able to keep my motivation somehow.”	0 (0)	2 (16.6)	2 (5.4)	0.099 (0.612)
<i>Shortage[†]</i>	Shortage of medical workers	“There is a serious problem, which is a lack of medical staff. Despite the large number of people who are waiting for treatment, the number of medical workers is a few.”	2 (8)	0 (0)	2 (5.4)	0.45 (0.425)
<i>Developing Countries[†]</i>	Help people in poor/developing countries	“In developing countries, many people die of infection, so I thought that I want to solve this problem by studying infection and developing a new vaccine or medicine.”	1 (4)	1 (8.3)	2 (5.4)	0.55 (0.381)
<i>Online Good</i>	Online classes are good/have benefits/less commuting time	“The on-demand format of the class allowed me to attend lectures at my own pace and deepen my understanding.”	0	1 (8.3)	1 (2.7)	0.324 (0.480)
<i>Determined[†]</i>	COVID made me more determined to become a medical technologist	“The COVID-19 pandemic made me determined to become medical lab technologist.”	1 (4)	0 (0)	1 (2.7)	0.676 (0.319)
<i>Vision[†]</i>	Can visualize the work (image) of a medical technologist/vision for the future	“The COVID-19 pandemic taught me what medical technologists do for their job.”	1 (4)	0 (0)	1 (2.7)	(0.676) 0.319

[†]Indicates medical science-specific coding labels

*Indicates statistically significant P-values

Supplementary Table S4. Demotivating factors, coding analysis of Group 2021.

Coding Label	Explanation	Example Sentence	Women (N=25) N (%)	Men (N=12) N (%)	Total (N=37) N (%)	Comparison by sex <i>P</i> (Effect size)
<i>Online Bad</i>	Online Classes / lectures are boring / bad/ have more disadvantages than advantages	"I feel that the prevalence of COVID-19 has discouraged me from learning. This is because I have not been able to take advantage of the various opportunities to gain knowledge in the medical field and because the format of online lessons does not suit me."	6 (24)	4 (33.3)	10 (27)	0.412 (0.442)
<i>Robbed</i>	Covid robbed me of my college life / events / experiences	"COVID-19 has robbed our precious college life."	7 (28)	2 (16.6)	9 (24.3)	0.376 (0.457)
<i>Discrimination[†]</i>	Demotivated / angry about by discriminatory attitudes towards patients and doctors	"At the beginning of the pandemic, health workers were discriminated against because they had many chances of infecting COVID-19."	4 (16)	0 (0)	4 (10.8)	0.192 (0.546)
<i>Negative Emotions</i>	I feel anxious / sad / worried/ fearful / scared / danger / helpless	"The COVID-19 pandemic causes me much stress and it is difficult to keep myself motivated to study. This is because I am not satisfied with my life, and because I am feeling anxious about several years down the road."	3 (12)	0 (0)	3 (8.1)	0.296 (0.493)
<i>Lack of Vision</i>	No clear idea / aspirations / anxious for the future	"I cannot have clear aspiration in my life and am worried about the future."	3 (12)	0 (0)	3 (8.1)	0.296 (0.493)
<i>Being Home</i>	Slacked off/boring at home	"During the time when I refrained from going out, I slacked off at home and didn't have much motivation to study."	2 (8)	1 (8.3)	3 (8.1)	0.704 (0.302)
<i>Lonely</i>	Feeling lonely / can't meet friends / family	"I felt lonely and my motivation for study became less and less."	2 (8)	0 (0)	2 (5.4)	0.45 (0.425)
<i>No Experiments[†]</i>	Demotivated to study because cannot do experiments / practical training / develop skills	"I cannot get a lot of skills like communication skill and practical skill."	2 (8)	0 (0)	2 (5.4)	0.45 (0.425)
<i>Mask</i>	Wearing a mask is hard	"Putting on a mask all day long is hard. This is because, I have naturally sensitive skin."	1 (4)	0 (0)	1 (2.7)	0.676 (0.319)
<i>Media Bad</i>	Watching the news made me anxious	"Seeing the severe situation in the medical field through reports related to COVID-19 on TV and the Internet, and learning about the unfair discrimination against medical professionals in the world through social networking sites, I began to feel vague anxiety about becoming a medical professional in the future."	1 (4)	0 (0)	1 (2.7)	0.676 (0.319)

[†]Indicates medical science-specific coding labels

*Indicates statistically significant *P*-values