



# An Observation of Healthcare Professions Students' Perceptions During the COVID-19 Pandemic

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## Abstract

This study conveys preclinical healthcare professions students' sentiments at 14 universities during the 2020 COVID-19 pandemic. Essays about students' thoughts and experiences were thematically sorted and revealed a variety of sentiments spanning from positive (e.g., pride, respect) to the more negative (e.g., anxiety, guilt, disappointment, anger). Themes revealed respect for the healthcare profession, but also the realization of its limitations, sacrifices, and risks. Healthcare profession educators need to be aware that the COVID-19 pandemic has affected students emotionally and may have long-term effects on the global healthcare profession. This study can serve as a historic documentation of how this generation of students felt and adds to the literature on how the pandemic affected the healthcare profession.

**Keywords** COVID-19 · Healthcare professions education · Student experiences · Student emotions · International comparison

## Background

The global COVID-19 pandemic has significantly impacted healthcare professions education on many levels [1]—university campuses closed [2], classes were moved to online formats and/or were significantly altered [3, 4], clinical training was interrupted and impacted [5–7], and in some countries, senior medical students graduated early to work on the frontlines [8].

To date, there is no clear understanding about how this pandemic impacts various aspects of learner education; including their emotions, learning activities, and career aspirations—in particular, from a global perspective.

As the pandemic affects countries and regions differently, the experiences and impact on the trainees worldwide can vary, and thus have different effects on healthcare globally.

The goal of this study was to capture students' perceptions, experiences, and emotions at 14 universities in 11 countries, during the 2020 COVID-19 pandemic.

Understanding how worldwide health events can impact students in different parts of the world is important for healthcare professions educators and will form the baseline of a historical context for how

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global issues can impact learner experiences, as it can have long-term consequences for young students at both the personal and professional levels, and therefore, on healthcare professions education and the healthcare profession at large.

The compilation of these perceptions serves as a historic documentation of students' thoughts during an unprecedented global pandemic, adds to the current literature on the effect of the COVID-19 pandemic on the healthcare profession, and serves as a baseline for longitudinal research on the professional careers of this particular generation of students.

## Activity

The participants in this study were preclinical healthcare professions students (i.e., medical and dental students) who volunteered in an online international student exchange program [9].

The students were asked to share their experiences during the COVID-19 pandemic in small international focus groups. Subsequently, they submitted individual essays about their thoughts, guided by open-ended questions (Table 1).

The written assignments were submitted anonymously, collected via Google Forms®, and analyzed for thematic content using a general inductive approach [10]. Five project team researchers of different ages, backgrounds, and ethnicities (A.W., V.M., R.G., C.X.Y., and H.S.) independently reviewed each submission. Specifically, the coders received anonymous essays that were blinded for originating school, gender, and age—only after the thematic coding was completed was this information revealed. The assignments were coded in two phases. In phase 1, the coders read all the essays and identified themes for each of the guided questions. All coders agreed on the themes before proceeding to the next step. In the second phase, the responses were then categorized into the coded themes using Excel®. The project team met regularly to resolve discrepancies and achieve consensus. Discrepancies included disagreement on interpretation or categorization of the content. Consensus was achieved via majority vote. If no consensus was achieved, the essay was excluded. Once all the essays were coded, the written pieces were identified and sorted by schools.

Due to disproportionate representation from each school, a comparison between schools was not possible, but striking differences were noted (i.e., when a theme was identified for all schools).

All assignments were collected between June 15 and July 15, 2020. Written consent was obtained as part of the program participation process.

Ethical approval was obtained from Columbia University (IRB No. AAA0003715), McGill University (IRB Study No.

A07-E54-17B), and the National Taiwan University (IRB No. 202001069 W).

## Results

### Student Demographics

A total of 81 students from 14 universities participated (Table 2). Eighty written assignments were received; essays were obtained from 69 medical and 11 dental students.

The results of the study focused on four of the selected guided questions listed in Table 1. Table 1 depicts representative sample quotes for each theme, subtheme, and sub-subtheme.

Overall, the students' responses revealed several overarching themes, and the majority of students each addressed a variety of emotions. The themes were grouped into positive and negative emotions. Furthermore, some themes were subdivided into subthemes and sub-subthemes.

### Sentiments

A positive emotion such as pride appears to be a sentiment that was present in many schools, with different sub-subthemes (e.g., proud to be a member of a school, a member of a healthcare profession, a member of the healthcare field, a citizen of a country). Negative emotions, such as fear and anxiety caused by the pandemic, were present in all schools regardless of country (e.g., fear of the disease, of the pandemic in general, for loved ones, for the healthcare profession, and anxiety about the future and the impact on education). Anger and frustration were commonly found in select countries, subdivided into three sub-subthemes (e.g., anger at the government, at others, at the situation). Students also expressed an underlying level of guilt.

Overall, it appears that students in the USA and the UK did experience more negative emotions (e.g., fear, anger, frustration, and disappointment), when compared for example with Denmark, Finland, Germany, and Taiwan. Positive emotions in the USA and the UK focused on pride in being a healthcare professional.

### Changes in Outlook on the Healthcare Profession

Respect for, and importance of, the healthcare profession dominated. Students also recognized the importance of good leadership in healthcare. Realization of the limitations of the profession, including sacrifice, risks, and undervaluation of the profession, was also found.

**Table 1** Questions, themes, sub-themes, and students' sentiments as reported by different schools; with select sample student quotes

Question	Themes	Sub-themes	Sub-subthemes	Sample
What were your sentiments during the pandemic?	Positive	Pride	School/university	"I was very proud to be a part of the Columbia University community during this pandemic. The university leaders were very informative, helpful, and communicative from day one. Some professors would teach us via Zoom in the morning, then head to the hospital to help fight COVID-19 immediately after. Even students made a big difference, with some Columbia students in NYC forming a student group to make masks for the frontline workers in the early days of the pandemic [sic]." (USA)
			Healthcare profession	"Proud of the medical field as a whole, and a very good opportunity to learn about crisis and pandemics. Looking forward to seeing what changes are made within healthcare [sic]." (London, UK)
			Citizen of a country	"I felt safe because Germany was in a very good position compared to other countries. Luckily Angela Merkel is such a smart woman and made the right decisions at the right time [sic]." (Halle, Germany)
		Curiosity	Profession	"I was very curious about the life of physician during these times as well as how they are living it [sic]." (Canada)
			Situation/pandemic	"I was curious about the situation. We did have microbiology in the spring so my knowledge on the matter improved at the same time [sic]." (Finland)
		Safety		"I felt quite safe the whole time during the worst part of the pandemic [sic]." (Munich, Germany)
		Happiness and satisfaction		"I was very happy all the time, never felt lonely and kept myself busy. I was getting used to the new situation easily and did not miss a thing [sic]." (Austria)
	Appreciation		"I've felt appreciative that I am receiving the training to help if a situation like this arises in the future [sic]." (USA)	
	Hope and desire		"Hope everything can soon get back on normal track, and hope no more people keeps suffering from this pandemic (pray) [sic]." (Taiwan)	

Table 1 (continued)

Question	Themes	Subthemes	Sub-subthemes	Sample
	Negative	Fear/anxiety	Family and friends	“A strange feeling of fear that relatives or friends got infected [sic].” (Munich, Germany)
			Healthcare profession	“I was worried about the frontline workers who were putting themselves at risk and who had to be isolated from their loved ones [sic].” (USA)
			Future	“I also felt anxious for the future outlook of my profession and how dentistry will never be quite the same [sic].” (USA)
			Education	“I was also anxious about how the changes in the curriculum might affect my future education [sic].” (Halle, Germany)
			Pandemic in general	“Seeing the news everyday about NYC or Italy scared me a lot and I got so upset seeing all those people die because they couldn't receive any treatment or their condition was just so bad [sic].” (Halle, Germany)
	Anger/frustration		Government	“I felt pretty angry and hopeless about how the US handled the pandemic [sic].” (USA)
			Other people	“...was sometimes angry when other people behaved stupidly and risked others with the actions [sic].” (Austria)
			Situation in general	“Yes I was frustrated because of being home all the time and “nothing to do” and no one to see [sic].” (Finland)
	Disappointment/hopelessness			“There were many adjustments to make while classes were continuing (moving back home etc.), and many disappointments to cope with (events through the rest of the year cancelled and travel cancelled for the summer) [sic].” (USA)
	Guilt			“I felt guilty for not doing more to help (but swamped with studying, given the continued fast pace of classes), and curious about the experience of doctors and what I would do in their situation [sic].” (USA)
	Vulnerability			“Opened my eyes to the fragility of the world, and how important health is (the world seemed to almost shut down) [sic].” (Cambridge, UK)
	Overwhelmed			“I felt overwhelmed and unmotivated at the beginning of the pandemic [sic].” (Austria)

**Table 1** (continued)

Question	Themes	Subthemes	Sub-subthemes	Sample
Has this experience changed your outlook on the medical profession?	Positive	Importance	Leadership	“I realized how important it [leadership] is and what an impact government leadership has on the healthcare field [sic].” (USA)
			Healthcare profession	“The pandemic has emphasized the role of medical professionals in my perception. A challenge like this has had me realizing the responsibility for leadership and professionalism of doctors on a national and even on a global level. Medical challenges are public challenges and touch the lives of each and everyone. This line of work feels even more important in the midst of a pandemic like this [sic].” (Finland)
	Positive	Respect		“I respect all medical professionals even more because they have been in life danger during this pandemic [sic].” (Finland)
				“This experience has changed my outlook on medicine as a profession because it has inspired me to want to be able to serve patients with the same passion and dedication that doctors have demonstrated over these last few months [sic].” (USA)
	Positive	Awareness	Public health and global health	“Highlighted the importance of public health interventions when necessary [sic].” (London, UK)
			Technology and medicine	“By working with standardized patients on zoom we have gained exposure to telemedicine and some of the challenges that accompany it. It will be interesting to see how the role of telemedicine expands [sic].” (USA)
	Positive	Better understanding of the profession		“It has changed my outlook on medicine since I’m seeing a bigger picture in treating patients sustainably and aiming to contribute to taking longtime care [sic].” (Austria),
				“No; I’ve have always seen doctors primarily as individuals who enjoy what they do and feel a sense of duty to protect their patients as best they can [sic].” (London, UK)
	Positive	No change		

Table 1 (continued)

Question	Themes	Subthemes	Sub-subthemes	Sample
How did the pandemic affect your career?	Negative	Limitation of the medical profession		“It highlighted that medicine can be limited—we may not have the treatment for everything, but we do have to deal with such uncertainties [sic].” (London, UK)
		Risk of the profession		“...that their oath to care for patients overrode their fears for their own health—but some pointed out the uncomfortable implications: their families, who would also be exposed, had taken no such oath. This was a truth that I had not considered about the profession [sic].” (USA)
		Sacrifice and undervaluation		“It has truly shown how undervalued and underpaid essential workers like nurses, careers in elderly homes, and cleaning staff are. Without them and their sacrifices during this time, many more people would have contracted the disease and died [sic].” (Austria)
	Positive	Gained opportunities		“It actually helped me as I was allowed to work in the intensive care in the hospital in a very early episode of my career [sic].” (Munich, Germany)
	Negative	Lost opportunities	Clinical education	“An inability to complete clinical placements and observerships; postponed to the beginning of next year [sic].” (London, UK)
			Research	“Since a lot of research facilities are closed it has changed part of my summer plan for this year but hopefully I can compensate for this later on during my medical student journey [sic].” (Canada)
		Impact on education	Difficulties studying	“It’s also a problem, that in the middle of August I have an exam which equals USMLE Step 1 in the US and right now as libraries are only open for getting books, I have to work and study at home which can be rather exhausting [sic].” (Munich, Germany)
			Loss of knowledge	“... Maybe now I have a worse base in fundamental concepts than I would have gotten with normal instruction [sic].” (USA)
			Delay in education	“It delayed pre-clinical training [sic].” (USA)
No effect				“I don’t think it affected my career quite a lot. I still have my jobs at the hospitals and even worked more shifts during the pandemic. My university switched to online courses so I won’t have any delay in getting my degree [sic].” (Munich, Germany)

Table 1 (continued)

Question	Themes	Subthemes	Sub-subthemes	Sample
How did your country handle the situation?	Positive	Pride		“The handling of both the German public and state authorities has been remarkable. Having the advantage of having seen how the outbreak can effect a society in Italy, the German response was to relatively fast shut down the whole public life in Germany [sic].” (Halle, Germany)
			Satisfaction	“I think the government did a pretty nice job [sic].” (Taiwan)
	Negative	Anger/critical	Anger/critical	“The government has the economy at its forefront of its mind. This means some changes have happened without enough scientific justification. All the actions seemed little too late [sic].” (London, UK)
		Disappointment		“I’d say we did a poor job at handling the pandemic, especially with PPE and prioritizing healthcare workers and their safety as they risked their lives to save patients [sic].” (USA)

In some students, the pandemic experience had no effect on their view of the profession.

### Impact on Career

The students felt that the pandemic affected their careers, in positive and negative ways.

Positive effects included emergence of new opportunities. Negative effects included lost opportunities, with sub-subthemes of loss of clinical education and research opportunities. Students perceived that their education was impacted, including difficulty studying, loss of knowledge, and delay in education.

For a number of students, the pandemic had little or no impact.

### Country’s Handling of the Situation

Positive and negative feelings were associated with how the pandemic was managed in the respective countries. Students reported having positive feelings such as pride and satisfaction. Negative feelings found in select countries (i.e., USA, UK) included anger/criticism and disappointment. A few students had mixed positive and negative emotions regarding their country. When reviewing emerging themes, it became evident that countries that did not function well during the pandemic (summer 2020) evoked negative feelings, whereas in countries that did perform well, more students had something positive to report.

### Discussion

In the present study, the authors reviewed the perceived impact of the recent COVID-19 outbreak on healthcare profession students from different parts of the world—in an observational snapshot, at a given point in time (June 15–July 15, 2020), to document the experiences of this generation of students.

Changes in study environments and school curricula, social isolation due to lockdown or quarantine, restriction of travel opportunities, and reshaping of human interaction have profoundly impacted individual and societal behaviors.

Unsurprisingly, a wide array of emotions was found that requires the attention of healthcare profession educators.

Independent of how severely the COVID-19 pandemic affected the students’ home countries at the time, all universities had representations of students’ fear and anxiety. Major disasters and pandemics in general can have a lasting psychological effect on a young person [11–13], and medical students’ reactions to natural disasters have been reported [14–19]. This report confirms the findings about emotions during pandemics in general [20]; particularly, during the COVID-19 pandemic [20–23]. These emotions may lead to

**Table 2** Participating universities, with student demographics. Fourteen schools participated in the program, and assignments were received from 13 schools. One school did not provide any written

submissions but participated in the small group discussions about the COVID-19 pandemic

University	Gender			Ages			Total
	Male	Female	Undisclosed	Under 20	Between 20 and 25	Above 25	
Colombia University, New York, USA	6	15	0	1	15	5	21
Kings College London, London, UK	3	1	0	3	1	0	4
Kyoto University, Kyoto, Japan	0	1	0	0	1	0	1
Ludwig Maximilians University, Munich, Germany	0	5	0	2	3	0	5
Martin Luther University, Halle-Wittenberg, Germany	2	4	0	0	6	0	6
McGill University, Montreal, Canada	0	3	1	0	4	0	4
Medical University of Vienna, Vienna, Austria	2	7	0	3	4	2	9
National Taiwan University, Taipei, Taiwan	7	4	0	1	7	3	11
Tokyo Women's Medical University, Tokyo, Japan	0	1	0	0	0	1	1
University of Cambridge, Cambridge, UK	1	4	0	1	3	1	5
University of Copenhagen, Copenhagen, Denmark	1	1	0	0	2	0	2
University of Helsinki, Helsinki, Finland	0	8	0	0	7	1	8
University of Paris, Paris, France	1	2	0	2	1	0	3
University of Sydney, Sydney, Australia	0	1	0	0	1	0	1
Total							81

mental health issues, such as post-traumatic stress disorder (PTSD), depression, and anxiety, but can also result in positive outcomes such as personal growth and resilience in the long term [14, 17]. Furthermore, during disasters, media exposure alone can have a psychological effect on students' emotions [24]. This could explain the ubiquitous presence of fear and anxiety among students who live in countries that were minimally affected by the pandemic at the time. Therefore, it may be advisable for schools to offer crisis support to students of this generation, as previously suggested [25].

Professional identity formation has recently been investigated and is a several-phase process [26]. It was reassuring to see that the severity of the pandemic was not associated with students having doubts about their choice of profession.

The finding that students felt that the pandemic made them proud to be in the healthcare profession is of importance for the future of healthcare.

It appears that a significant number of students reflected on challenges inherent to the healthcare profession (e.g., danger, risk, sacrifice, importance of leadership, global health). This finding is of importance as it may prompt changes in their future career paths.

Although too early to evaluate the impact on their healthcare professions education, the students were concerned with negative effects on their careers. However, many of them were hopeful that over the long term, a delay in education/training would not be of importance. The authors

suggest that universities should consider offering these students additional research and training opportunities to make up for the time lost during the pandemic, so that they can remain competitive with previous cohorts.

It will be important to follow-up with this generation of students and to assess the educational outcomes of this particular cohort. This information is particularly important, as the role of online learning might be increasing in higher education.

Notably, despite the different effects of the pandemic on their home countries, students in all countries reported a mix of positive and negative emotions, indicating the complexity of their reflections. For that reason, as part of the study, the authors included the students' opinions of how their countries fared—to underline the intricacy of what influenced their feelings.

Although the voluntary nature of the program, the focus on preclinical students, the lack of a control group, and the small number of participants limit the generalizability of the results, the authors conclude that overall, the pandemic affected healthcare professions students. Although a likely possibility, it is too early to surmise if this experience will have a long-term effect on these students' careers. This observational study can serve as a historic documentation of how students of this particular generation felt during a global crisis, can serve as a resource for further comparative investigations, and supports healthcare professions educators in addressing future problems.



## Future Directions

After this initial observational study, focused qualitative and quantitative research with more students is underway, to investigate the impact of the pandemic on the students' mental health and professional careers.

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## Declarations

**Conflict of Interest** The authors declare that they have no conflict of interest.

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