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Experience of operating a medical humanities course at one medical school during the COVID-19: a retrospective study

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Background: This study summarizes the experience of operating a 'Medical Humanities' course, which was taught remotely to maintain activities and discussions at medical schools in Daegu, Korea during the sudden and unexpected coronavirus disease 2019 (COVID-19).

Methods: The subjects of this study were 73 first- and 79 second-grade medical students who took the medical humanities (1) and (2) courses among first- and second-grade students of Yeungnam University College of Medicine in 2020. Of the 152 students who agreed to the online survey, 123 completed the survey. Self-, environmental, and program evaluations were conducted on the study subjects, and differences according to grade and gender were analyzed.

Results: As a result of the study, a significant difference between self-evaluation and environmental evaluation was confirmed. Self-evaluation was determined to be higher in the first grade than in the second grade. The environmental evaluation showed that male students were more satisfied than female students and students generally had difficulties in the classroom environment. Of the applications used in class, the highest satisfaction was observed with KakaoTalk (Kakao Corp.) and Zoom (Zoom Video Communications Inc.). At the end of COVID-19, the students preferred online classes.

Conclusion: If the learning environment for online classes is well prepared and systematic provisions are made, such as class operations that are suitable for the subject, effective education and learning can be achieved by taking advantage of both face-to-face and online classes.

Keywords: COVID-19; Medical education; Medical humanities; Medical students; Online classes

Introduction

In 2020, the world was experiencing a pandemic due to the rapid spread of coronavirus disease 2019 (COVID-19). The COVID-19 pandemic is considered the most powerful pandemic since the Spanish flu of 1918, which was recorded as the first pandemic of humankind [1]. Outbreaks of 2002 to 2003 severe acute respiratory syndrome and 2015 Middle East respiratory syndrome showed high mortality rates, but are not considered pandemics. As the first pandemic since the 2009 swine flu, COVID-19 caused fear and

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confusion around the world due to its rapid infection and mortality rates.

Previous outbreaks of infectious diseases have also caused great losses to individuals, society, and the economy; however, these effects are difficult to compare with those of COVID-19. The COVID-19 pandemic is rated as the world's largest medical catastrophe, causing the largest economic loss since World War II. COVID-19 quickly spread to more than 200 countries on five continents within a few months, completely changing the lives of people around the world, including their economies, societies, and cultures [2]. One of the biggest changes was a change in communication, which appeared the fastest in the education field [3].

During COVID-19, online education, which had been provided previously by educational facilities with special purposes, such as cyber universities, was adopted by all universities across the country, and each school had no choice but to undergo trial and error to provide high-quality online education in the absence of preparation [4]. With the transition from face-to-face to online classes, both students and professors were faced with the task of adapting to online teaching and learning within a short period of time.

In particular, because of the nature of the curriculum dealing with human life, medical school education has a large number of subjects and a large amount of material to learn. Classes are centered on practice and case studies, increasing the impact of forced remote learning [4].

In the last decade, medical school education has been transforming education by implementing team-facilitated, active, and self-directed learning. In most medical schools today, discussion-oriented problem-based learning, small-group activities, clinical practice, and academic projects occupy a large part of medical school education, and the educational effectiveness of these practices has been recognized [5].

Prior to COVID-19, medical education was based on meetings in physical space, and this rapidly changed due to the COVID-19 pandemic. The entire process of medical education shifted online through platforms, and this phenomenon was common in all countries, including the United States, the United Kingdom, Canada, and other countries with advanced education. Medical school students around the world had to adapt quickly to home-based learning, and some medical school students lost sight of their educational goals during the transition to online courses [6-9].

Korea was no exception to this change. Korea was classified as a country with entry restrictions by almost all other countries due to an explosive increase in the number of confirmed cases since the first confirmed case of COVID-19 in February 2020. In particular, in the Daegu and Gyeongbuk regions, the COVID-19 situation was so serious that 82% of all confirmed cases in Korea occurred in these regions as of March 30, 2020, resulting in the declaration of a special disaster area [10]. Under these circumstances, medical colleges in Daegu and Gyeongbuk had no choice but to utilize non-face-to-face online curricula.

In Korea's medical education, medical humanities education aims to cultivate competence in affective areas necessary for future doctors, rather than to simply transfer knowledge. Activity-oriented educational methods, such as team-facilitated, active, and self-directed learning, have been widely applied for this purpose. Yeungnam University College of Medicine operates a series of subjects called 'Medical Humanities' for integrated humanities education.

This study summarizes the experience of operating the 'Medical Humanities' course, which had been operated mainly in person at a medical school in the Daegu area, in an online classes setting during the COVID-19 pandemic.

Yeungnam University College of Medicine's 'Medical Humanities' series courses are offered in all grades. The students are divided into 12 groups for each grade, and group guidance professors are assigned. This subject consists of activity-oriented topics, discussion-oriented topics, peer evaluation, and portfolio evaluation, with the guidance of professors and students at the center. This course is designed and operated as a learning method in which interactions between professors and students and between students and students are important. Before COVID-19, all class activities in the 'Medical Humanities' subject were conducted face-to-face, but due to COVID-19, all meetings and activities had to be conducted online classes. Accordingly, students' experiences with online classes medical humanities subjects were studied.

1. Yeungnam University College of Medicine: Medical Humanities course

Yeungnam University College of Medicine's 'Medical Humanities' course series is a unique subject of the College of Medicine for the education of integrated medical humanities. With the underlying principles of coordination and integration of basic medicine, clinical medicine, and medical humanities, currently, medical humanities (1), medical humanities (2), medical humanities (3), and medical humanities (4) courses corresponding to the first, second, third, and fourth grade of medicine are being offered, respectively.

This medical school operated a four and six grades School of Medicine in parallel, but closed the School of Medicine in 2015 and switched in 2017 to a full-scale College of Medicine system of six grades from freshmen level. Accordingly, the College tried to design a curriculum that connects the premedical department to

the medical department through curriculum reform. In addition, to operate a curriculum for the harmonization and integration of basic medicine, clinical medicine, and medical humanities, medical humanities-related subjects from the second semester of the second grade of the premedical department, where the basic medical curriculum begins, to the fourth grade of the medical department, were linked and integrated.

In particular, to establish an integrated medical humanities school in the Department of Medicine, where studying as a full-fledged medical student begins, medical humanities (1), medical humanities (2), medical humanities (3), and medical humanities (4) courses correspond to the first, second, third, and fourth grades of medicine were newly established. Medical humanities courses were taught from freshmen year in 2017 and were then offered sequentially in subsequent years; currently, medical humanities (1) to (4) are offered.

Classes in medical humanities (1) and (2) consist of special lectures, discussions, and group cultural activities. In the special lecture, the same subject is taught in every other grade, and the first- and second-grade students of the medical department are required to take the same subject. The evaluation method consists of portfolio professor, peer, and absolute evaluations, and group activity experiences are shared through a comprehensive presentation at the end of the semester.

The subject of medical humanities (3) is medical humanities education within the clinical practice curriculum, and important major tasks within medical humanities are selected and experienced directly through third-grade clinical practice subjects of the medical department. Medical humanities (4) comprehensively practices previous medical humanities topics, and the Good Work Project is implemented. An outline of the 'Medical Humanities' subject series at Yeungnam University College of Medicine is shown in Table 1.

Methods

Ethical statements: Prior to the survey, a consent form was provided and an online test was designed so that only students who agreed to voluntarily participate could respond. The survey was designed such that it could be stopped immediately if desired, and these matters were disclosed. This study was approved by the Institutional Review Board (IRB) of Yeungnam University Hospital (IRB No: 2020-10-037-004).

1. Subjects

The subjects of this study were 73 first- and 79 second-grade medical students who took the medical humanities (1) and (2) courses among the first- and second-grade medical students of Yeungnam University College of Medicine in 2020. Thus, a total of 152 students were enrolled in the study.

The first-grade medical students took the 'medical humanities' course for the first time and experienced the online classes medical humanities (1) course without having experienced the face-to-face course. The second-grade medical students had experienced the face-to-face medical humanities (1) course in 2019 and the online classes medical humanities (2) course in 2020.

2. Instruments

The previously developed and implemented Yeungnam University College of Medicine education program questionnaire was revised and supplemented with questions suitable for medical humanities subjects, and online classes-centered medical humanities class-related questions were developed. Three medical education experts and two pedagogical experts participated in questionnaire development. The questionnaire consisted of self-, environmental, and program evaluations. The self-evaluation consisted of participation

Table 1. Yeungnam University College of Medicine humanities courses outline

Subject name	Medical humanities course			
	(1)	(2)	(3)	(4)
Grade	Department of Medicine 1	Department of Medicine 2	Department of Medicine 3	Department of Medicine 4
Core contents	Medical humanities in basic medical curriculum	Medical humanities in basic medical curriculum	Medical humanities in the clinical practice curriculum	Medical humanities as a prospective doctor
Main activities	Medical humanities special lectures and discussions, cultural activities	Medical humanities special lectures and discussions, cultural activities	Important medical humanities task by clerkship	Good work project during clerkship
Assessment methods	Portfolio, peer evaluation, professor evaluation	Portfolio, peer evaluation, professor evaluation	Portfolio, peer evaluation, professor evaluation	Performance plan and process evaluation, peer evaluation, professor evaluation
	Pass/Fail	Pass/Fail	Pass/Fail	Pass/Fail
Course duration	Semester 1, 2	Semester 1, 2	Semester 1, 2	Semester 1

and sincerity components, and the environmental evaluation focused on difficulties in the class environment, discussion places in the class, satisfaction with applications used for class discussions, and satisfaction with professors in charge of each group. The program evaluation emphasized satisfaction with online classes medical humanities classes, application satisfaction, preferred teaching methods after COVID-19, and evaluation-method satisfaction.

3. Data collection

From January 5, 2021 to January 30, 2021, when the medical humanities (1) and (2) courses were completed, an online survey was conducted with the research subjects, including the announcement of research participant recruitment and the consent form. The survey site address was sent to the students' mobile phones, and the research purpose, method, and content were explained in detail in the recruitment notice prior to the survey. Then, by accessing the address of the online survey site, the students were asked to complete the online consent form and survey.

4. Statistical analysis

The collected data were analyzed using IBM SPSS ver. 25.0 (IBM Corp., Armonk, NY, USA) as follows. First, an independent sample *t*-test was conducted to verify the differences in medical school years and genders for the self-evaluation, 'classroom environment and satisfaction with the guidance of the professor in charge' for the environmental evaluation, and 'teaching method and evaluation method' for the program evaluation. Second, a cross-analysis was conducted to confirm the preference according to grade and gender for the 'discussion places in the class' and 'applications used for class discussions' in the learning environment.

Results

1. Characteristics of research participants

A total of 152 people who completed medical humanities (1) and medical humanities (2) were asked to respond, and 123 students (response rate, 80.9%) who agreed to participate in this study were selected as research subjects. Of the 123 final study participants, 77 (62.6%) were men and 46 (37.4%) were women. There were 48 first-grade medical students (40.0%) and 72 second-grade medical students (60.0%) (Table 2).

Table 2. The gender and medical course grade of the subjects

Gender	Medical course grade		Total
	1	2	
Male	31 (40.3)	46 (59.7)	77 (100)
Female	17 (37.0)	29 (63.0)	46 (100)
Total	48 (39.0)	75 (61.0)	123 (100)

Values are presented as number (%).

2. Differences in satisfaction with self-evaluation, classroom environment evaluation, and program evaluation according to gender and grade

Independent sample *t*-tests were conducted to determine whether there were differences in 'participation and sincerity' in the self-evaluation, 'satisfaction with the classroom environment and guidance of the professor in charge' in the environmental evaluation, and 'satisfaction with the teaching method and evaluation method' in the program evaluation according to gender. A statistically significant difference was confirmed in the 'difficulty of the classroom environment' in the environmental evaluation, and it was found that male students were more satisfied than female students (2.25 vs. 1.76, $p < 0.05$) (Table 3).

To determine whether there were differences in 'degree of participation and sincerity' in the self-evaluation, 'difficulty in the class environment, satisfaction with the guidance of the professor in charge' in the class environmental evaluation, and 'online classes medical humanities class satisfaction, and satisfaction with evaluation method' in the program evaluation according to medical school grade, independent sample *t*-tests were performed. A statistically significant difference was found in the degree of participation and the sincerity of self-evaluation ($p < 0.05$). Both participation and sincerity were higher in the first grade of medical school than in the second grade of medical school (Table 4).

3. Differences in application satisfaction levels by gender and grade

To confirm the difference in satisfaction with applications used in class discussions during the COVID-19 pandemic in the classroom environmental evaluation, independent sample *t*-tests were conducted on KakaoTalk (Kakao Corp., Jeju, Korea), Zoom (Zoom Video Communications, San Jose, CA, USA), Google Classroom (Google Inc., Mountain View, CA, USA), Google Form (Google Inc.), face-to-face meetings, and others. Satisfaction with KakaoTalk and Zoom was the highest, and satisfaction with Google Form was the lowest. A statistically significant difference was found in Google Form satisfaction according to gender ($p < 0.05$); female students scored 3.52, which was significantly higher than the score of male students (2.92) (Table 4).

To confirm the difference in satisfaction with the applications used during the COVID-19 pandemic according to medical school grade, independent sample *t*-tests were conducted on KakaoTalk, Zoom, Google Classroom, Google Form, face-to-face meetings, and others. The results showed that satisfaction with Ka-

Table 3. Differences in satisfaction with self-evaluation, classroom environment evaluation, and program evaluation according to gender and medical course grade

Division	No.	Self-evaluation		Classroom environment evaluation		Program evaluation	
		Participation	Sincerity	Difficulty in the class environment	Guidance of the professor in charge	Online classes medical humanities	Evaluation method
Gender							
Male	77	4.00±0.87	3.91±1.02	2.25±1.23	3.92±0.89	4.08±0.96	3.92±0.89
Female	46	3.80±0.81	4.11±0.71	1.76±0.99	4.09±0.81	4.33±0.73	4.09±0.81
p-value		0.219	0.202	0.025	0.305	0.133	0.305
Grade							
1	48	4.19±0.79	4.02±0.86	2.00±1.13	4.02±0.86	4.21±0.92	4.02±0.86
2	75	3.76±0.85	3.96±0.86	2.11±1.19	3.96±0.86	4.15±0.87	3.96±0.86
p-value		0.006	0.002	0.622	0.703	0.708	0.703
Total	123	3.93±0.85	3.98±0.91	2.07±1.16	4.23±0.77	4.17±0.88	3.98±0.86

Values are presented as mean±standard deviation.

Table 4. Application satisfaction by gender

Application	Male		Female		*p*-value
	No. of subjects	Mean±SD	No. of subjects	Mean±SD	
KakaoTalk	73	4.14±0.82	42	4.29±0.74	0.335
Zoom	65	3.42±0.98	33	3.64±1.14	0.322
Google Classroom	48	2.85±1.07	24	3.00±0.98	0.577
Google Form	48	2.92±1.07	21	3.52±0.93	0.027
Face-to-face meeting	49	2.71±1.15	22	2.45±1.01	0.366
Others	42	3.31±0.90	22	3.32±0.99	0.972

SD, standard deviation.
KakaoTalk, Kakao Corp., Jeju, Korea; Zoom, Zoom Video Communications, San Jose, CA, USA; Google Classroom, Google Inc., Mountain View, CA, USA; Google Form, Google Inc.

kaoTalk and Zoom was the highest, and a statistically significant difference was found in satisfaction with Zoom according to the school grade level ($p<0.01$). The satisfaction of first-grade students was 3.88, which was found to be significantly higher than that of second-grade students (3.20) (Table 5).

4. Preferred discussion places and class methods post-COVID-19 pandemic by gender and grade

To confirm the preference for discussion places that were mainly used in the medical humanities class after the COVID-19 pandemic ended, the students were allowed to choose home, cafe, reading room, or 'others.' In addition, face-to-face, online classes, or 'it does not matter' could be selected as the preferred teaching method.

Most of the students preferred to discuss at home. After the COVID-19 pandemic was over, 55 students (44.7%) preferred online classes, 48 students (39.0%) had no preference, 17 students (13.8%) preferred face-to-face classes, and three students (2.4%) preferred some other situation.

A cross-analysis was conducted to confirm the difference in the preferred discussion place and teaching method after COVID-19 by gender, but no statistically significant difference was found ($p<0.05$). In addition, a cross-analysis was conducted to confirm the difference in the preferred discussion place and teaching method after COVID-19 by medical school grade, but no statistically significant difference was found ($p<0.05$) (Table 6).

Discussion

This study examined the experiences with online classes medical humanities courses of medical students who faced sudden changes due to COVID-19. Some of these students had already experienced active activity-centered medical humanities classes before COVID-19. The recommendations based on the research results are as follows.

First, despite the sudden situation caused by COVID-19, medical students were found to be highly satisfied overall with online medical humanities classes according to self-evaluation and program evaluation; however, it was found that difficulties in the class environment were great.

The difficulties in the classroom environment due to suddenly

Table 5. Application satisfaction according to medical course grade

Application	Grade 1		Grade 2		*p*-value
	No. of subjects	Mean ± SD	No. of subjects	Mean ± SD	
KakaoTalk	45	4.36 ± 0.77	70	4.09 ± 0.79	0.075
Zoom	42	3.88 ± 0.92	56	3.20 ± 1.03	0.001
Google Classroom	29	3.14 ± 1.06	43	2.74 ± 1.00	0.115
Google Form	29	3.28 ± 1.13	40	2.98 ± 1.00	0.247
Face-to-face meeting	31	2.81 ± 1.25	40	2.50 ± 0.99	0.252
Others	28	3.50 ± 0.88	36	3.17 ± 0.94	0.154

SD, standard deviation.
KakaoTalk, Kakao Corp., Jeju, Korea; Zoom, Zoom Video Communications, San Jose, CA, USA; Google Classroom, Google Inc., Mountain View, CA, USA; Google Form, Google Inc.

Table 6. Preferred discussion places and class methods after the COVID-19 pandemic end according to gender and medical course grade

Variable	Gender			Grade			Total
	Male	Female	*p*-value	1	2	*p*-value	
Discussion place							
Home	65 (60.2)	43 (39.8)	0.137	45 (41.7)	63 (58.3)	0.107	108 (100)
Others	12 (80.0)	3 (20.0)		3 (20.0)	12 (80.0)		15 (100)
Total	77 (62.6)	46 (37.4)		48 (39.0)	75 (61.0)		123 (100)
Teaching method							
Face-to-face	13 (76.5)	4 (23.5)	0.621	7 (41.2)	10 (58.8)	0.701	17 (100)
Online classes	34 (61.8)	21 (38.2)		21 (38.2)	34 (61.8)		55 (100)
Does not matter	28 (58.3)	20 (41.7)		20 (41.7)	28 (58.3)		48 (100)
Others	2 (66.7)	1 (33.3)		0 (0)	3 (100)		3 (100)
Total	77 (62.6)	46 (37.4)		48 (39.0)	75 (61.0)		123 (100)

Values are presented as number (%).
COVID-19, coronavirus disease 2019.

adopting online classes can be considered to be caused by changes resulting from COVID-19. The biggest change caused by COVID-19 was a change in communication, and it first appeared in the education field [3]. As schools rapidly shifted from in-person to online classes, medical school students were reported to experience problems due to ill-prepared classes and learning environments resulting from the sudden change in online class structure [11]. Due to COVID-19, the learning space called 'school' disappeared for students, and medical students, in particular, were reported to have difficulties due to the loss of the learning space where they spent most of their time studying [12,13].

In this study, it was found that most students attended medical humanities classes and had discussions at home. In the sudden transition to online classes, despite providing the students with basics such as a medium and space for classes and learning, the students had to prepare by themselves, and there were many difficulties due to the sudden pandemic situation. In addition, medical school students had problems adjusting to online classes due to ill-prepared online education and professors who had no experience in preparing online lectures [2].

Second, when comparing various applications such as Zoom, Google Classroom, Google Forms, and face-to-face meetings, it was found that students preferred Zoom and KakaoTalk.

It has already been reported that Zoom is the application with which college students are most satisfied in practice classes because it enables instant conversation and chatting with other parties in real time [14]. Because KakaoTalk also allows real-time conversations, student satisfaction should be high. Various studies and methods have been proposed to solve the problems of real-time conversations in situations where online classes are inevitable. In online classes, a virtual whiteboard that enables mutual communication, collaborative thinking, and an interactive pad for stimulating learner participation has been developed and presented [15]. Therefore, in online classes, professors should apply a teaching method that allows interaction in various ways, and research on this topic should continue.

Students preferred Zoom or KakaoTalk to face-to-face meetings, even though face-to-face meetings are the most active way to com-

municate. This shows the fear of safety caused by the pandemic that students were aware of at the time [16].

Although there are many concerns about online classes, research results on positive aspects have recently been reported. One of the biggest advantages of online classes is that they can help self-directed learning and provide intrinsic motivation for learning [15]. Due to the nature of medical school education, self-directed learning and intrinsic motivation are important; therefore, it is necessary to prepare for effective learning by exploiting the advantages of online classes.

Finally, even after the COVID-19 pandemic ended, medical students preferred online medical humanities classes. It can be seen that there are several advantages if the learning environment for online classes is adequately prepared, and a positive effect has been reported, especially in activity-oriented classes [17-19]. In the lecture-centered online class, the students were passive, had reduced concentration, and experienced boredom; however, in the activity-centered online class, the students demonstrated active class participation and interest. In online classes centered on discussion and participation, students experienced more active participation and interaction than in face-to-face classes, and it was reported that the students demonstrated free expression [18]. Although there is a negative emotional impact of online classes, they have been shown to strengthen student agency and have a positive effect on cooperation and overcoming challenges [19]. As such, online classes have the advantage of improving students' self-directed learning, intrinsic learning, class participation, and interest through online teaching methods.

An opportunity arose during the COVID-19 pandemic for the development and application of online education. If one can enjoy the advantages of both online and in-person lectures, one can aim for a learning outcome that is superior to the teaching and learning that occurred before the pandemic. Now is the time to build know-how and move beyond trying and preparing for online lectures; analyses of member perceptions and needs for online education must be continued. It is expected that the present study will serve as useful basic data to understand the perceptions of changes in the educational environment in such a situation and to improve deficiencies.

COVID-19 has also taught us about the need for flexibility and adaptability. This should be extended to governments, medical institutions, and students [20]. Our experiences from COVID-19 will undoubtedly help the education and development of medical schools. It is also necessary to reflect on how these experiences and reorganized medical education programs can be integrated [21].

In response to such a rapidly changing situation, difficulties such as adapting to different methods and learning new technologies were highlighted. In contrast, the situation can be interpreted differently in that changes that would normally be made relatively slowly were accelerated during the pandemic. In other words, it can be said that the pandemic shortened the time to change, which normally would have been delayed slightly, and thus, innovation was hastened faster than the existing speed of social change. In addition, an opportunity was provided to discuss changing teaching and learning methods and to move forward in a positive direction.

Notes

Conflicts of interest

No potential conflict of interest relevant to this article was reported.

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Author contributions

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