DETERMINATION OF THE SATISFACTION LEVELS OF PROSPECTIVE TEACHERS REGARDING THE E-LEARNING APPLICATION DURING THE CORONAVIRUS PANDEMIC

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Abstract:
Due to the effects of the Covid-19 pandemic, schools and universities around the world had to interrupt their education and switched to online education. In this study, it is aimed to determine the satisfaction levels of prospective teachers who have to take their courses with web-based distance education due to the pandemic towards e-learning. The satisfaction scale regarding the e-learning process developed by Gulbahar (2012) was used to collect data. The study was conducted at a state university in Turkey with 520 university students (prospective teachers). In this study, it was determined that prospective teachers were generally satisfied with the e-learning process. Students stated their level of satisfaction with the sub-dimensions of "Communication and Usability", "Teaching Process" and "Teaching Content" mostly as "often" and "always" on a Likert-type scale. While the students mostly answered "rarely" and "often" questions about the interaction of the "Interaction and Evaluation" sub-dimension, they answered "often" and "always" to the questions about Evaluation. In addition, a positive significant relationship at the level of 0.01 was found between four sub-dimensions in the study.

Keywords: distance education, teacher candidates, university students, satisfaction

1. Introduction

In the world, the most common diseases people are exposed to are upper respiratory tract infections mostly caused by viruses. Coronavirus varieties are among the viruses that cause upper respiratory tract infections for decades. The covid-19 virus is a type of virus in the beta-coronavirus family, including SARS-CoV and MERS-CoV (Karcıoglu, 2020). The covid-19 virus first appeared on December 1, 2019, in Wuhan, the capital of the Hubei region of China. After its emergence, it has caused very important changes and effects on health, economy, social life and education practices. Due to these effects, it was declared

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a global pandemic by the World Health Organization on March 11, 2020 (Can, 2020). In conjunction with the announcement of a pandemic throughout the world and in Turkey, steps have been taken to prevent the spread of infection and disease. In this context, closing the borders of the country, starting to use the distance education model by interrupting education, home or flexible working, quarantine practices and curfews have caused significant changes in human life as global and regional ongoing measures (Akca & Kucukoglu, 2020).

Worldwide, schools and universities have been closed due to the effects of the Covid 19 pandemic. According to UNESCO (2020) data, as of March 11, 2020, schools have been closed in 144 countries due to the Covid 19 pandemic. Likewise, only one month later, as of April 7, 2020, the number of countries where schools were closed increased to 188 (Can, 2020). In Turkey, in a similar manner in all educational institutions since March 16, 2020, primarily it was suspended for three weeks, then it was continued with distance education in primary and secondary schools (Kahraman, 2020). However, due to the increase in the epidemic, formal education was completely abandoned during the spring term, and it was decided to continue with distance education throughout the period. Likewise, due to the pandemic, higher education institutions continued their education with distance education. In universities, after the first 3-4 weeks of face-to-face training, education was interrupted and then classes continued with distance education and the spring semester of the 2019-2020 academic year was completed with distance education.

Distance education means that education reaches students web-based with the help of developing internet technologies and computers (Newby, Stepich, Lehman & Russell, 2006). Although there are internet-based distance education examples and structures in the infrastructure of many universities in Turkey, a structuring called "emergency distance education" was needed during the pandemic process. As a quick solution to the crisis caused by COVID 19, universities structured according to formal education have started to work rapidly in order to continue their courses and programs with web-based distance education instead of face-to-face education and transitioned to emergency distance education (Gewin, 2020). Since this transition was very fast, an assessment could not be made regarding the adaptation of students to the requirements and protocols of distance education (Iyer, Aziz & Ojcius, 2020).

Both students and academicians were affected by new methods and practices related to distance education. The first encounter with these new tools and methods posed several challenges for both sides (Tuysuz, 2009; Ugulu, Sahin & Baslar, 2013; Ugulu, 2020). Most of the trainers have never used before distance education tools. Considering that the trainers have limited knowledge and skills in distance education and preparing distance education material, it cannot be said that everything is carried out flawlessly in the distance education lessons. Distance education is a field of science with theoretical foundations and planning should be made by taking these theoretical foundations into consideration for successful distance education (Newby, Stepich, Lehman & Russell, 2006). However, due to the pandemic, emergency distance education

was started before the necessary planning could be made. Therefore, students were more affected by the transition to distance education without the necessary preparations. Therefore, in this study, it was aimed to determine the level of satisfaction of university students towards e-learning, who received face-to-face education but had to take their courses with web-based distance education due to the pandemic.

2. Material and Methods

2.1. Research Design
In this study, the survey model, one of the quantitative research designs, was used. Survey model is a research approach that aims to define a past or present situation as it exists. In this model, there is no effort to change or influence whatever is the subject of research. The aim of this method is to search for answers to the questions of what is the current state of the event or problem that is desired to be investigated with field scanning (Yorek, Ugulu & Aydin, 2016).

2.2. Sampling
The research universe consists of the 2nd, 3rd and 4th-year students of a state university in Turkey. As it was thought that it was difficult to reach all of the students within the scope of the study, sampling was chosen. The sample of the study consists of 520 prospective teachers studying at the same state university. The sampling was created using the convenience sampling method among non-random sampling methods (Fraenkel & Wallen, 2006). In the convenience sampling method, the researcher chooses a situation that is close and easy to access. This sampling method brings speed and practicality to the research (Ugulu, 2015a, b). Some demographic information of the university students in the sample is given in Table 1.

Table 1: Demographic Information of the Sampling Group

		N	%
Gender	F	307	59,0
	M	213	41,0
Grade	2	194	37,3
	3	66	12,9
	4	259	49,8

2.3. Data Analysis
In the study, frequency and percentage values for each item were calculated for the data obtained from the study in order to determine the satisfaction levels of university students with the e-learning process. In addition, Pearson correlation coefficient was calculated to determine whether there was a relationship between the sub-dimensions of the scale depending on the data collected.

2.4. Data Collection Tool

In the study, "E-learning process satisfaction scale" developed by Gulbahar (2012) was used to determine the satisfaction level of university students with the e-learning process. The scale developed in 5-point Likert type consists of 4 sub-dimensions and 29 items. The scale has 7 items in the "Communication and Usability" sub-dimension, 8 items in the "Teaching Process" sub-dimension, 4 items in the "Teaching Content" sub-dimension, and 10 items in the "Interaction and Evaluation" sub-dimension.

The scale was applied to the students online via Google classroom after the spring semester of the 2019-2020 academic year ended. As a result of the analysis of the collected data, the Cronbach alpha internal consistency coefficient was 0.75 for the "Communication and Usability" sub-dimension, 0.88 for the "Teaching Process" sub-dimension, 0.86 for the "Teaching content" sub-dimension, 0.92 for the "Interaction and Evaluation" sub-dimension, and 0.95 for the whole scale.

3. Results

The data obtained from the analysis made for the "Communication and Usability" sub-dimension of the data collection tool are presented in Table 2. For the expression "The Teaching Management System (TMS) used for the management of the course met the student needs.", 22.3% of the students stated "sometimes", 28.5% "often" and 9.4% "always". 14.2% of the students stated "sometimes", 28.7% "often" and 48.5% "always" on the item "The virtual classroom environment used for lectures could be easily used.". 18.8% of the students stated "sometimes", 5.8% "often" and 8.7% "always" on the expression "The links in the TMS were designed to facilitate navigation within the site.". 14.8% of the students said "sometimes", 36.3% "often" and 44.2% "always" to the item "TMS had an easy-to-use interface.". 18.7% of the students answered "I was able to quickly access all the information I was looking for within the scope of the course content." as "sometimes", 28.7% "often" and 45.6% "always". For the item "In the TMS, the teaching content was organized weekly or modularly.", 12.7% of the students answered "sometimes", 31.2% "often" and 53.3% "always". On the expression "Different information and communication technologies (chat, forum, blog, wiki, etc.) were used to support course activities and assignments.", 24.6% of the students stated "sometimes", 28.1% "often" and 32.1% "always". When looking at the data related to the "Communication and Usability" sub-dimension, students mostly stated "often" and "always".

Table 2: Frequency and percentage values
of the "Communication and Usability" sub-dimension

Items	Never		Rarely		Sometimes		Often		Always	
	F	%	F	%	F	%	F	%	F	%
The "Teaching Management System (TMS)" used for the management of the course met the student needs.	7	1,3	44	8,5	116	22,3	148	28,5	205	39,4
The virtual classroom environment used for lectures could be easily used.	9	1,7	36	6,9	74	14,2	149	28,7	252	48,5
The links in the TMS were designed to facilitate navigation within the site.	9	1,2	29	5,6	98	18,8	186	35,8	201	38,7
TMS had an easy-to-use interface.	3	0,6	21	4,0	77	14,8	189	36,3	230	44,2
I was able to quickly access all the information I was looking for within the scope of the course content.	8	1,5	29	5,6	97	18,7	149	28,7	237	45,6
In the TMS, the teaching content was organized weekly or modularly.	2	0,4	13	2,5	66	12,7	162	31,2	277	53,3
Different information and communication technologies (chat, forum, blog, wiki, etc.) were used to support course activities and assignments.	25	4,8	54	10,4	128	24,6	146	28,1	167	32,1

The data obtained from the analysis made for the "Teaching Process" sub-dimension of the data collection tool are presented in Table 3. For the expression "Explanatory and detailed information on how to study the course was presented as a Study Guide.", 23.7% of the students stated "sometimes", 26.3% "often" and 30.6% "always". 18.1% of the students stated "sometimes", 34.8% "often" and 37.3% "always" on the item "Information was given on the results of topics such as plagiarism, false reference, and late delivery of assignments.". 23.5% of the students stated "sometimes", 26.5% "often" and 29.8% "always" on the expression " Asynchronous event opportunities were provided for those who could not participate in synchronous events.". 15.6% of the students said "sometimes", 29.8% "often" and 56.3% "always" to the item " At the beginning of the lesson, an introduction message/announcement/video containing general information about the lesson and directing it to the lesson syllabus was delivered.". 22.1% of the students answered "In order to create a positive online learning atmosphere, a comprehensive introduction and introduction activities were planned for the students." as "sometimes", 28.8% "often" and 28.8% "always". For the item "Timely and explanatory feedback was given about homework and activities.", 19.8% of the students answered "sometimes", 27.7% "often" and 43.5% "always". On the expression "The lecturers were successful in guiding the teaching process.", 21% of the students stated "sometimes", 26.9% "often" and 40.4% "always". 21% of the students said "sometimes", 26.5% "often" and 37.7% "always" to the item "The lecturers were experienced and competent in e-learning". For the "Teaching Process" sub-dimension, similar to the "Communication and Usability" sub-dimension, students mostly stated "often" and "always".

Table 3: Frequency and percentage values of the "Teaching Process" sub-dimension

Items	Never		Rarely		Sometimes		Often		Always	
	F	%	F	%	F	%	F	%	F	%
Explanatory and detailed information on how to study the course was presented as a "Study Guide".	30	5,8	71	13,7	123	23,7	137	26,3	159	30,6
Information was given on the results of topics such as plagiarism, false reference, and late delivery of assignments.	8	1,5	43	8,3	94	18,1	181	34,8	194	37,3
Asynchronous event opportunities were provided for those who could not participate in synchronous events.	32	6,2	73	14,0	122	23,5	138	26,5	155	29,8
At the beginning of the lesson, an introduction message/announcement/video containing general information about the lesson and directing it to the lesson syllabus was delivered.	16	3,1	27	5,2	81	15,6	155	29,8	241	46,3
In order to create a positive online learning atmosphere, a comprehensive introduction and introduction activities were planned for the students.	27	5,2	78	15,0	115	22,1	150	28,8	150	28,8
Timely and explanatory feedback was given about homework and activities.	13	2,5	34	6,5	103	19,8	144	27,7	226	43,5
The lecturers were successful in guiding the teaching process.	16	3,1	45	8,7	109	21,0	140	26,9	210	40,4
The lecturers were experienced and competent in e-learning.	26	5,0	51	9,8	109	21,0	138	26,5	196	37,7

The data obtained from the analysis made for the "Teaching Content" sub-dimension of the data collection tool are presented in Table 4. For the expression "The content was logically and efficiently organized.", 21% of the students stated "sometimes", 26.5% "often" and 37.7% "always". 21.2% of the students stated "sometimes", 26.7% "often" and 40.2% "always" on the item "The course content was structured to facilitate learning.". 20% of the students stated "sometimes", 28.1% "often" and 40.6% "always" on the expression "The course content was presented clearly.". 22.1% of the students said "sometimes", 32.3% "often" and 35.8% "always" to the item "Teaching materials were adequate, up-to-date, and appropriate for the level of knowledge.". When looking at the data related to the "Teaching Content" sub-dimension, students mostly stated "often" and "always".

Table 4: Frequency and percentage values of the "Teaching Content" sub-dimension

Items	Never		Rarely		Sometimes		Often		Always	
	F	%	F	%	F	%	F	%	F	%
The content was logically and efficiently organized.	12	2,3	51	9,8	109	21,0	138	26,5	196	37,7
The course content was structured to facilitate learning.	20	3,8	42	8,1	110	21,2	139	26,7	209	40,2
The course content was presented clearly.	24	4,6	35	6,7	104	20,0	146	28,1	211	40,6
Teaching materials were adequate, up-to-date, and appropriate for the level of knowledge.	10	1,9	41	7,9	115	22,1	168	32,3	186	35,8

The data obtained from the analysis made for the "Interaction and Evaluation" sub-dimension of the data collection tool are presented in Table 5. For the expression "Different tools (chat, forum, blog, wiki, e-mail etc.) were used for interaction.", 22.7% of the students stated "sometimes", 29.6% "often" and 32.1% "always". 24.2% of the students stated "sometimes", 19.4% "often" and 32.1% "always" on the item "Collaborative group activities were held to increase social learning and interaction.". 20.8% of the students stated "sometimes", 19% "often" and 20% "always" on the expression "Different activities and opportunities were presented to strengthen the interaction between students.". 24.8% of the students said "sometimes", 22.9% "often" and 18.3% "always" to the item "Different activities and opportunities were presented to strengthen the interaction between student and academic staff.". 26.9% of the students answered "Activities that should be executed synchronously and asynchronously were specified separately." as "sometimes", 28.8% "often" and 27.7% "always". For the item "Various classical and alternative assessment methods were used together in the course.", 27.1% of the students answered "sometimes", 31.3% "often" and 26.7% "always". On the expression "The assessment methods used were sufficient to determine student achievement.", 24.4% of the students stated "sometimes", 26.7% "often" and 25.8% "always". 23.7% of the students said "sometimes", 29.4% "often" and 30.8% "always" to the item "The evaluation criteria to be used for the activities are clearly specified for each different activity.". 21.7% of the students answered "The time prescribed for the completion of the given activities and homework was sufficient." as "sometimes", 27.1% "often" and 31.3% "always". For the item "Information on evaluation percentages, evaluation criteria and grading for different activities was presented.", 27.1% of the students answered "sometimes", 26.9% "often" and 31.9% "always". While students mostly stated "rarely", "often" and "always" to the interaction-related questions of the "Interaction and Evaluation" sub-dimension, they gave "often" and "always" to their questions about evaluation.

Table 5: Frequency and percentage values of the "Interaction and Evaluation" sub-dimension

Items	Never		Rarely		Sometimes		Often		Always	
	F	%	F	%	F	%	F	%	F	%
Different tools (chat, forum, blog, wiki, e-mail etc.) were used for interaction.	25	4,8	56	10,8	118	22,7	154	29,6	167	32,1
Collaborative group activities were held to increase social learning and interaction.	89	16,0	103	19,8	126	24,2	101	19,4	107	20,6
Different activities and opportunities were presented to strengthen the interaction between students.	97	18,7	112	21,5	108	20,8	99	19,0	104	20,0
Different activities and opportunities were presented to strengthen the interaction between student and academic staff.	68	13,1	109	21,0	129	24,8	119	22,9	95	18,3
Activities that should be executed synchronously and asynchronously were specified separately.	31	6,0	55	10,6	140	26,9	150	28,8	144	27,7
Various classical and alternative assessment methods were used together in the course.	20	3,8	57	11,0	141	27,1	163	31,3	139	26,7
The assessment methods used were sufficient to determine student achievement.	42	8,1	78	15,0	127	24,4	139	26,7	134	25,8
The evaluation criteria to be used for the activities are clearly specified for each different activity.	26	5,0	58	11,2	123	23,7	153	29,4	160	30,8
The time prescribed for the completion of the given activities and homework was sufficient.	43	8,3	60	11,5	113	21,7	141	27,1	163	31,3
Information on evaluation percentages, evaluation criteria and grading for different activities was presented.	10	1,9	63	12,1	141	27,1	140	26,9	166	31,9

In order to determine whether there is a relationship between the answers given by the students at the level of the sub-dimensions of the scale, the Pearson Moment correlation coefficient was calculated and the data obtained are presented in Table 6. In the correlation analysis, a positive correlation was found between the "Communication and Usability" sub-dimension and the "Teaching Process" as 0,658, between "Teaching content" as 0.636 and between the "Interaction and Evaluation" sub-dimension as 0.579. Similarly, a positive relationship at the level of 0.788 between the "Teaching content" of the "Teaching Process" sub-dimension and a positive relationship at the level of 0.786

between the "Interaction and Evaluation" sub-dimension were found. A positive relationship at the level of 0.719 was found between "teaching content" and "Interaction and Evaluation" sub-dimension.

Table 6: Findings on the relationship levels between the sub-dimensions

Sub-dimensions	Teaching Process	Teaching Content	Interaction and Evaluation
Teaching Process	0,658**	0,636**	0,579**
Teaching Content		0,788**	0,786**
Interaction and Evaluation			0,719**
**. Correlation is significant at the 0.01 level.			

4. Discussion

Due to the effects of the Covid-19 pandemic, schools and universities around the world had to interrupt their education and switched to online education. Evaluating students' satisfaction with these new learning environments is extremely important in terms of the quality, effectiveness and efficiency of learning environments. Because the student's satisfaction with the e-learning process is one of the most important factors that shape the design, presentation, functioning and quality of the learning environment (Gulbahar, 2012). In the study examining the factors affecting satisfaction level, Beqiri, Chase, and Bishka (2009) concluded that people who have a positive attitude towards learning using online technologies and who are competent in using these technologies have higher satisfaction. Similarly, in another study, Pena and Yeung (2010) concluded that as the level of Information Communication Technology competence decreases, the level of satisfaction also decreases. Considering the opportunities provided by the e-learning model to students, first of all, the individual can receive education whenever and wherever they want, in line with their individual characteristics, and students can access educational materials whenever they want (Cheong, 2002; Yücel, 2006). This increases the level of satisfaction with the usefulness of e-learning.

In this study, it was determined that university students were generally satisfied with the e-learning process. Azeiteiro et al. (2015), as a result of their research on students enrolled in undergraduate, graduate and doctoral programs, found that students participating in the study have a high level of satisfaction with regard to e-learning. In the study conducted by Chua and Montalbo (2014) to evaluate the satisfaction of learners in virtual learning environments, it was determined that both female and male learners were satisfied with the system. Shayan and Iscioglu (2017) stated in their study that regardless of age, gender and chapter variables, most of the learners were satisfied with the use of e-learning management system. Korkmaz, Çakır and Tan (2015) in their study to determine the satisfaction levels of university students towards e-learning; they found that students were moderately satisfied with the communication features and usefulness of the e-learning environment, and they were quite satisfied with the learning processes offered to them through the system and the e-content used in the e-learning environment. When evaluated in this context, it can be said that the students in this study are generally

satisfied with e-learning. It is seen in many studies that there are similar results (Muilenburg ve Berge , 2005; Klein, Noe, &Wang, 2006).

In this study, in which the satisfaction levels of university students with the e-learning process were examined, the students mostly stated "often" and "always" for the statements about the "Communication and Usability" sub-dimension. This shows that students are generally satisfied. Jung-Wan and Mendlinger (2011) determined that the usefulness of e-learning systems positively affects satisfaction. The ability to receive rapid support in technical and administrative matters and to be in constant communication with the instructor are the main factors affecting the success of students in e-learning environments. This supports the view that communication affects students' satisfaction level.

In the statements about the "Teaching Process" sub-dimension, the students mostly stated "often" and "always". This situation showed that students are generally satisfied with the teaching process carried out in e-learning. Lee & Hwang (2007) stated that learning in an e-learning environment is fast and permanent. In e-learning, students develop a program suitable for them, arrange their needs, goals, subject contents, how they will learn and evaluation stages themselves. This is one of the reasons for students' satisfaction with the teaching process in e-learning. Supporting this statement, Rosen (2009) found that university students' attitudes towards e-learning are positive.

In the statements about the "Teaching Content" sub-dimension, the students mostly stated "often" and "always". This situation showed that students are generally satisfied with the teaching content in e-learning. In order to get the best results from the use of e-learning, the teaching content should be planned in detail (Erkol & Ugulu, 2014). Because learning content in e-learning environments has an important effect on learner satisfaction (Lee & Hwang, 2007). Due to the Covid-19 pandemic, UNESCO (2020b) suggests that some strategies commonly used by education systems in distance education should be prepared in the fields of technology, content, pedagogy and monitoring and evaluation in order to provide better quality and equal education opportunity for everyone. Therefore, well-designed teaching content will increase students' satisfaction level.

The students mostly answered the statements in the "Interaction and Evaluation" sub-dimension as "often" and "always". Although students were generally satisfied with the methods used in the evaluation of courses in e-learning, they were not fully satisfied with the interaction between student-student and student-faculty member. According to Rosen (2009), the synchronous e-learning model provides two-way communication and is also economical in terms of time and cost, but since there is no face-to-face communication between people, it becomes difficult for people to understand each other correctly. Palmer and Holt (2009) stated that students 'online communication status affects learners' level of satisfaction with the online learning process. In other studies, it was stated that student-student and teacher-student communication in interactive lessons affected students' level of satisfaction with the e-learning process (Lee & Rha, 2009; Palmer & Holt, 2009; Ilgaz & Gulbahar, 2015). Askar et al. (2005) investigated the

effects of blended learning on student satisfaction within the framework of usability, instructional design and application dimensions, and showed that interaction is a critical component in online learning environments and that increasing interaction in e-learning has a positive effect on students' satisfaction. Considering the limitations of e-learning, firstly, it seems that it prevents socialization among students since it is independent of time and place (Lee & Hwang, 2007; Ugulu, 2019). Since this situation reduces the interaction compared to face-to-face education, the level of satisfaction of the students in this study may not be high.

Considering the relationship between the answers given by the students, a positive significant relationship was found between all sub-dimensions. This situation shows that the components of e-learning should be evaluated as a whole in order to increase students' satisfaction level with e-learning (Ehlers, 2003; Tuysuz, Demirel & Yildirim, 2013).

Studies have stated that students' level of readiness has an effect on students' satisfaction with the program (Ugulu, Aydin, Yorek & Dogan 2008; Yorek, Sahin & Ugulu, 2010; Ugulu, 2013; Yilmaz, 2017). Before starting e-learning applications in order to increase student satisfaction, students' level of readiness regarding e-learning can be determined. In addition, the studies emphasize the importance of the readiness level of teachers and institutions towards e-learning as well as students (Akaslan & Law, 2011; Darab & Montazer, 2011; Tuysuz, 2014; Ugulu & Yorek, 2015). Therefore, the level of readiness of teachers and institutions related to e-learning as well as students can be determined.

5. Conclusion

It will be difficult for students who do not have internet connection, tablet or computer facilities and who cannot access this opportunity outside of their schools to follow online education. For this reason, it should be investigated whether the students' level of technical infrastructure has an effect on their satisfaction with the e-learning process.

In order to increase the satisfaction levels of the students, necessary plans can be made and teachers can be instructed for e-learning environments that can be applied for emergencies. In order to prepare for emergencies, some courses can be taught continuously through distance education. The factors affecting students' satisfaction with the e-learning process can be investigated. Likewise, it may be recommended to support students' satisfaction levels in the e-learning process with qualitative data in order to understand more deeply and to make more detailed examinations. The e-learning process can be arranged in line with the satisfaction of the students.

6. Limitations

Regarding the limitations of the study, it is not possible to make generalizations as the sample consists of participants studying at only one university and cannot be considered

to represent the whole country. In addition, the fact that candidates from all teaching branches did not participate in the study limits the description of pre-service teachers' views on distance education. This study examines prospective teachers' views on distance education without allowing them to explore other factors such as the teaching branch.

For future research, it is recommended to expand the research to a wider sample and to take into account the opinions of pre-service teachers from different branches. At the same time, qualitative data can also be included in future research to examine the factors influencing teachers' views in more depth. Both current and future research studies can contribute to finding ways to successfully implement distance education.

Conflict of interest statement
The authors declare no conflicts of interests.

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