

Smoothing Transition from High School to Medical School Through E-Learning Module

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Received: 2021 March 27

Revised: 2021 September 03

Accepted: 2021 September 09

Published online: 2021 November 02

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Citation:

Khabaz Mafinejad M, Jahan S, Khaiat Rasouli M, Hatampour K, Ganjedanesh MR, Ahmadi N, Valizadeh Samakoosh Z, Rezaiee M, Moradi M, Taherahmadi M. Smoothing Transition from High School to Medical School Through E-Learning Module. Strides Dev Med Educ. 2021 December; 18(1):e1054. doi: 10.22062/sdme.2021.195925.1054

Abstract

Background: Numerous medical students feel that they are not ready to study medicine at the beginning of entering university. One way to reduce the challenges of entering the university is to provide opportunities to familiarize students with the university.

Objectives: This study was conducted to design an educational e-learning module for freshman medical students to help a successful transition to university life.

Methods: This study was a single-group study with a post-test design at Tehran University of Medical Sciences, Tehran, Iran, within 2018-2019. The transitional e-learning module included content regarding academic integration, social integration, and information integration. The e-learning module for new medical students was implemented as a 20-day course at the beginning of their attendance at the university. After the students completed the e-Learning course or module, a questionnaire was completed to assess students' attitudes toward the quality of the transitional e-learning module. The data were analyzed using SPSS software (version 22.0).

Results: Out of 209 questionnaires, 135 questionnaires were returned. The findings showed that more than 65% of the students believed that the program could prepare them for academic integration into the institution. In total, the highest (8.62 ± 1.15) and lowest (7.07 ± 2.39) scores belonged to the "information integration" and "social integration" sections, respectively.

Conclusion: The e-learning module was implemented to provide students with practical support to adapt to the university. The survey findings showed that it helped freshman medical students prepare for academic and information integration into the university.

Keywords: Curriculum, Medical Education, Virtual, Transition

Background

One of the major challenging phases for students is their transition from high school to university (1-3). The beginning of the 7-year period of the medical curriculum is a turning point in the life of students. After years of effort, they find themselves in a new position in terms of social environment, educational program, and lifestyle. The ability to integrate oneself into new settings can be highly troublesome for most medical students. Numerous students are not familiar with the environment before entering the university

and do not have much information about their roles and expectations. Therefore, most medical students describe this phase as a transition shock and might experience high stress and anxiety levels (4).

Several studies provide evidence that students' transition between different educational phases and rise of stress levels and negative emotions are related (5-7). Numerous medical students feel that they are not ready to study medicine at the beginning of entering university (8). A study showed that although students are highly motivated when they enter university, most of them

face a new phase of their lives that is quite challenging (9). Fromme et al. (2008) believe that transition from high school to university is a turning point that requires students' personal growth and behavioral changes (10).

One possible reason for medical students' stress could be unawareness of what to expect during the course and lack of information on how to cope with the university. The importance of this problem is necessitated by the fact that a large number of students drop their training after they are enrolled in colleges because they fail to complete their program timely and face the new life at university inappropriately (11). However, transition periods might also present individuals with opportunities for personal development and growth. Therefore, Nielson, in the theory of work role transitions, believes that the transition period should not be considered a short period; nevertheless, this period is a dynamic process during which an individual is transferred from a certain set of conditions to another situation with different features and during this transition change of expectations, tasks, or responsibilities by the individual is considered a major challenge (12). From the point of view of Panser et al. (2004), numerous university-designed curricula are offered to prepare students to contribute greatly to the dream of many problems they face when it comes to their university life (13).

One way to reduce these challenges is to provide opportunities to familiarize students with university. According to Pittman and Richmond (2008), the role of universities in the students' transition process is essential (14). It requires the application and use of adaptive strategies to function properly in the new environment (15-17). Undoubtedly, considering students' individual and social issues upon entering university and providing appropriate support can be a step toward reforming and conducting orientation programs (13). Therefore, university officials and educational planners should be aware and use the best management methods to assist students in the transition process from high school to university.

Undoubtedly, to achieve this important goal, various methods are available to prepare learners to enter the university. Today, the explosion of information, along with the growth of technology and the emergence of recent advances in behavioral and cognitive sciences that have caused widespread changes in modern educational strategies, is a set of conditions that lead to innovation in the use of interactive methods in medical education programs (18). On the other hand, currently, cyberspace has become an important topic in medical education, and the use of cyberspace platform facilities in teaching students has been widely welcomed (19, 20). The results of studies showed that with the expansion of information and communication frontiers, the use of information technology and social media in medical specialties is increasing widely (21). On the other hand, the current students are from the millennial generation with its own characteristics, a generation among which

the use of cyberspace has become widespread (22).

Although the value of the transitional course in medical education is well established (23-25), a very limited number of interventional studies have been performed in this regard. Furthermore, research into what matters to conducting educational intervention in different transition phases shows that choosing methods that are understandable, user-friendly, and fit for available facilities and resources is often neglected (9). Therefore, further studies are needed to assess the transitional course to better understand how and what elements provide support for students (26).

Objectives

This study was conducted to design an educational e-learning module for medical students to help a smooth and successful transition to university life. A part of this aim sought answers to the following research question:

What are the freshman medical students' perceptions of the effectiveness of the transitional e-course from high school to university?

Methods

This study was an interventional single-group study with a post-test design conducted at School of Medicine, Tehran University of Medical Sciences (TUMS), Tehran, Iran, within 2018-2019.

The course of undergraduate medical education at TUMS is a 7-year program consisting of 2.5 years of basic sciences, 1 year of pathophysiology, 2 years of clerkship, and 1.5 years of internship. Medical students in Iran enter university through the entrance exam. The face-to-face transition ceremony from high school to university is held at TUMS as a 2-day program in the first week of medical students' attendance in Medical School since 2011. Since there are approximately 20 days from the announcement of university entrance exam results to university attendance, to use this opportunity to familiarize medical students with university, a transitional e-learning module from high school to college was designed and implemented.

The population of this study included the medical students of TUMS, entering October 2018-2019. The inclusion criterion for this study was being admitted as a new medical student at TUMS. The exclusion criterion was the unwillingness to participate in the course.

This transitional e-learning module was designed to familiarize and adapt freshman medical students with the university. For the recognition of the students' needs, the literature was reviewed, and senior students' opinions were gained using a focus group. In the designing phase, a draft of the program was prepared through several meetings with representatives of various stakeholders, including medical educationists, educational managers, and medical students. An educational-supportive program was designed and implemented as a transitional e-learning module to facilitate freshman medical students' interactions with

the university. Additionally, the program was designed in various sections to increase the effectiveness of the course, including 1) academic integration, 2) social integration, and 3) information integration.

Content regarding academic integration includes educational clips, applied information, educational regulation information, and news and announcements. Educational videos contained getting familiar with the medical curriculum, basic sciences lessons, psychological skills, and understanding the relationship between basic and clinical sciences. Moreover, one of the indirect purposes of this part of the project was becoming familiar with faculty members, professors, and the different facilities of the campus. Overall, 15 video clips were prepared and made available for students; three of these video clips introduced educational programs and medicine courses; three video clips discussed expected competencies, such as "medical ethics and professionalism", "reasoning and problem solving", and "personal development"; eight video clips introduced the basic sciences courses; one video was about the relationship between basic and clinical sciences courses. The most commonly used free medical software, such as general and medical dictionaries and three-dimensional anatomy software, was introduced. Helpful websites and main medical reference books were also presented. For news and announcements, information about university rules and regulations, including how to register and introduction of academic, sports, and welfare facilities of the university, was provided in this section.

Content regarding social integration includes six study guides regarding familiarity with student lifestyle and cultural differences, city, university map, city tourist sites, and public transportation system. In addition, this part was rendered to familiarize students with different student organizations and activities. Content regarding information integration includes interaction and communication with students to answer their concerns and questions individually and provide frequently asked questions. Furthermore, one hundred questions were answered to provide information for students.

A researcher-made questionnaire was used to assess students' attitudes toward the quality of the transitional e-learning module. The questionnaire consisted of 12 close-ended items scored based on a 4-Likert scale and 5 close-ended items scored within

the range of 1-10 points. The content validity of the questionnaire was assessed by eight experts in the field of medical education and medicine. In this phase, the experts were asked to give their opinions on the clarity and importance of each item on the questionnaire qualitatively. Face validity was assessed by reviewing the opinions of five medical students on the clarity of the items. In this stage, the experts were asked to comment on each item. The reliability of the questionnaire was measured by evaluating the internal consistency of the questionnaire's items using calculating Cronbach's alpha (0.68). The data were analyzed using SPSS software (version 22.0). Frequency and mean (standard deviation) were used to analyze the descriptive data.

Ethical approval to conduct the present study was obtained from the Ethics Committee of TUMS (IR.TUMS.VCR.REC.1397.639). The participants were offered the opportunity to complete an anonymous voluntary survey at the end of the program. All participants were assured that their responses would remain confidential.

Results

A total of 209 students participated in the e-learning module from high school to university using convenience sampling. The mean age of the participants was 18.2 years (range: 18-20 years), and 48.4% of the participants were female. A total of 209 questionnaires were handed out individually among new entrants, out of which 135 (64.5%) were returned. The results of the survey showed that more than 65% of the students believed that the program could prepare them for academic integration into the institution. Moreover, 68.1% of the students believed that the university had more facilities at the time of entering (Table 1). On average, the highest (8.62 ± 1.15) and lowest (7.07 ± 2.39) scores belonged to "content regarding information integration" and "content regarding social integration" sections, respectively. Tables 2 and 3 show the results of program evaluation.

Discussion

In this study, an educational-supportive e-learning module was designed and implemented to facilitate medical students' adaption process in the 2018-2019 academic year. According to Westerman (2014), the

Table 1. Students' Familiarity with Conditions before Entering the University

Familiarity with university	At the time, I believed the university had more facilities	At the time, I predicted the university's facilities correctly	At the time, I believed the university had fewer facilities	I do not have any comments
University amenities	113 (83.7)*	12 (8.9)	8 (5.9)	2 (1.5)
Educational facilities	92 (68.1)	30 (22.3)	2 (1.5)	11 (8.1)
Welfare facilities	81 (60)	24 (17.8)	14 (10.4)	16 (11.8)

*The values are as N (%)

Table 2. Students' Views on the Effectiveness of the Transitional E-course from High School to University

Subject	A lot	Medium	A little	I do not have any comments
Effectiveness of educational videos in becoming familiar with the medical program	38 (28.1)*	58 (43)	8 (6)	31 (22.9)
	More than 75%	75-50%	49-25%	Less than 25%
Effectiveness of introduced software in studying medicine	25 (18.5)	75 (55.7)	26 (19.2)	9 (6.6)
Effectiveness of introduced websites in studying medicine	25 (18.5)	59 (43.7)	40 (29.6)	11 (8.2)
Effectiveness of introduced textbooks in studying medicine	43 (31.8)	61 (45.2)	20 (14.8)	11 (8.2)
	A lot	Medium	A little	I do not have any comments
Introduction to the university's welfare facilities	34 (25.2)	61 (45.2)	20 (14.8)	20 (14.8)
Introduction to student associations and journals	67 (49.7)	34 (25.1)	12 (8.9)	22 (16.3)
	Good	Medium	Weak	I do not have any comments
Giving immediate response to questions and concerns	119 (88.1)	16 (11.9)	0 (0)	0 (0)
	More than 75%	75-50%	49-25%	Less than 25%
The content is effective in solving the concerns	50 (37)	69 (51.1)	12 (8.9)	4 (3)
	Good	Medium	Weak	I do not have any comments
Effectiveness of news and announcements	101 (74.8)	23 (17)	8 (6)	3 (2.2)

*The values are as N (%)

Table 3. Students' Scores of the Quality of Different Sections of the Transitional E-course

	Quality (0-10 score)	Minimum	Maximum	Mean	Standard deviation
Academic integration	Content regarding educational clips	0*	10	7.29	1.70
	Content regarding applied information	1	10	7.95	1.41
	Content regarding educational regulation information	3	10	7.75	1.56
Social integration	Student lifestyle in Tehran and cultural differences	0	10	7.07	2.39
Information integration	Response to concerns and FAQs	5	10	8.62	1.15

*FAQs, frequently asked questions

transitional course at the beginning of students' presence in college can create challenging and stressful situations for them and be accompanied by numerous opportunities and threats (27).

During this transition, the changes in expectations and responsibilities are considered big challenges for each student, which requires using supportive strategies to have proper functions in the new environment. Transitional courses can play a critical role in getting students situated in an unfamiliar setting (28). Furthermore, orientation courses can help students cope with the vast knowledge and skills required in the dynamic and rapidly changing health care system (29). Therefore, the purpose of this study was to facilitate communication and interaction with TUMS before attending the university campus by providing a comprehensive transitional e-learning module from high school to university.

In addition, according to the present study, medical students face numerous challenges, such as the lack of familiarity with university regulations and unfamiliarity

with learning styles and the lifestyle at university. A possible explanation for some of the current study results might be the lack of adequate preparation and mentoring and the lack of administrative support from the university. Some authors have speculated that this transfer might be accompanied by several concerns, including getting familiar with the new setting, understanding new rules and regulations, acquiring learning skills, and gaining new knowledge considering different needs (8, 27), which is in line with the results of the current study. A study performed by Radcliffe and Lester (2003) demonstrated that most students describe the transition from high school to university as great stress, especially considering the change in their lifestyle at the beginning of their attendance to the university while being unfamiliar with its processes (8). Therefore, it is necessary to design supportive programs to meet this need.

The transitional e-learning module in the present study was designed and implemented as a longitudinal 20-day course based on a needs assessment survey for recognizing

the academic and psychological needs of medical students. Designing numerous support programs to meet new students' needs can be presented with different forms and content (30-32). A possible explanation for this might be that the careful and systematic selection of the structure and content of such programs plays the most important role in their effectiveness. The main reason for transition programs' failure is choosing templates that are limited to a short period and content that does not consider students' academic and psychological needs (6). In this study, a longitudinal 20-day e-learning module was designed to increase the ease of transition from high school to university for medical students. The present findings seem to be consistent with those of other studies reporting that a 1-month similar orientation program was designed in Government Medical College, Nagpur, India, in August 2019, which had six orientation modules (33).

Based on the researchers' knowledge, the transitional e-learning module of Medical School in TUMS occurred for the first time in Iran before new students' presence on the campus. The results of evaluating the aforementioned course showed that medical students were quite satisfied with the different features of the program. It seems possible that these results are because the proposed course framework can be considered a guide for designing other transition periods from high school to university based on three principles. Firstly, this course identifies various aspects of the transition to the university that are hard and challenging for many medical students. Secondly, the presented course matches the needs recognized by students and their function in the university. Thirdly, it was easy to communicate with the students in this course using an online environment.

One of the main features of this program is the development of a structured academic e-learning module comprised of various sections for helping students toward a smooth transition from high school to university. The present study findings seem to be consistent with those of other studies demonstrating that three factors should be considered to have a successful transition, namely 1) presenting an accurate academic program to prepare students for the transition from one phase to another, 2) providing financial support in college to transit to different phases, and 3) preparing a website or virtual platform by the educational institute to support students for attending the university (34).

Despite the project's strengths, our analysis in this article is limited to perspectives of medical students in the survey. In addition, since participating in the course and returning the questionnaires were optional, there was a high dropout rate in the completed questionnaires. It is suggested to perform studies over a long-term period to investigate the effect of the transition course on stress control in new medical students. For running a similar orientation program from high school to college, it is recommended to have an appropriate assessment of students' needs; therefore, it can be helpful to have a student representative in the working group to develop

an orientation program. Furthermore, students prefer to communicate directly and ask their questions and concerns; consequently, considering how to connect with students during the orientation programs can be essential.

Conclusion

The educational-supportive e-learning module for new medical students was designed and implemented to provide them with practical support to adapt to the new settings. The survey findings showed that medical students were satisfied with participating in the transitional e-learning module, and it helped them prepare for academic, information, and social integration. It is essential to provide students with a structured educational program to assist them toward a smooth transition to university. The successful design and implementation of this program can be a good model to develop similar supportive programs in the years ahead and at other universities.

Acknowledgments

The authors would like to express their gratitude for all the efforts of medical students in conducting this study. Moreover, the authors would like to show their appreciation toward the officials of Medical School at TUMS who contributed to this program.

Conflicts of Interest: None.

Ethical Approvals: The study was approved by the ethics committee at Tehran University of Medical Sciences (No. IR.TUMS.VCR.REC.1397.639).

Funding/Support: None.

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