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Implementation and evaluation of extracurricular theme for undergraduate basic sciences medical courses at Shiraz Medical School

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Abstract:

BACKGROUND: In recent years, to achieve the fundamental goal of educating meta-competent future medical doctors, varieties of educational methods have been proposed in all medical schools. In Shiraz Medical School, we implemented an extracurricular theme focusing mostly on medical education's psychosocial aspect. This study aims to discuss the implementation and evaluation of this extracurricular theme.

MATERIALS AND METHODS: The present study is a descriptive-analytic one; we included all undergraduate medical students in basic sciences courses who started medical education in 2014 and 2015 in Shiraz Medical School. The evaluation tools were questionnaires designed in different formats and handed out to medical students before and after the workshops. Data were analyzed by paired sample *t*-test in SPSS Software Version 23.

RESULTS: Students' satisfaction was more than 60% in all items of all workshops, except in some items of studying and learning methods and research methods workshops, which were lower than 60%. Students' knowledge about all aspects of communication skills, stress management, critical thinking, studying and learning methods, and research methods workshops improved significantly after participation in these workshops.

CONCLUSIONS: Medical students can become meta-competent future medical doctors. They can reach all of the learning outcomes described in the three-circle model of learning. This goal cannot be achieved by implementing a medical curriculum which only contains medical literature. Some extracurricular issues based on students' and societies' requirements must be added to the main curriculum. The whole curriculum must be evaluated continuously, and required changes must be applied.

Keywords:

Educational techniques, training programs, workshops

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Introduction

In recent years, medical curricular planners all over the world are putting all of their efforts to promote medical training. They are looking for the most effective educational curriculum for their medical students. Their educational programs aim to train more professional medical doctors who are entirely oriented to their job and their

responsibilities.^[1] According to the World Health Organization (WHO), a "five-star doctor" is an excellent caregiver with some meta-competencies. This doctor evaluates and promotes the quality of the care, knows how to implement new technologies in his or her job, improves a healthy lifestyle, considers individual and public health demands, and knows how to attend productively and efficiently in teamwork.^[2]

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Although medical education is still following traditional strategies in many medical schools all over the world, educational leaders have figured out that these conventional methods are not adequate for training the new century medical doctors. They recommended that medical schools focus more on their medical education program, and more up-to-date teaching methods should be applied.^[3-5]

In addition, one of the essential elements of a successful educational program that can help educational planners revise and improve the program is evaluation. The evaluation is based on the students' and professors' feedback and point of view.^[6]

Shiraz Medical School was established in 1952; since the 1st days of establishment, its founders' chief concern was to construct a perfect educational atmosphere. Primarily, they sought to employ the most sophisticated medical doctors and professors, the ones with the best and most up-to-date knowledge to educate young and brilliant medical students. Gradually, they realized that a strong faculty is not enough for comprehensive education; hence, in 1969, Shiraz Medical School joined the teacher education program held by the WHO and became a regional center for training teachers, the new and efficient methods of teaching. Therefore, the curricular committee figured out that education and education methods must change dynamically, new training methods must be offered, and these programs must be evaluated continuously.^[7]

Despite all efforts to apply new teaching methods to educate more competent medical students in Shiraz Medical School, the whole structure of the medical curriculum was following the traditional format until 2008 that the main educational reform took place by implementing a horizontal integration model. This model is described as integrating multiple subjects into one course in a specific period. It was applied for undergraduate basic sciences medical courses by combining courses such as anatomy, physiology, and biochemistry into "interdisciplinary blocks,"^[8-10] according to the evaluation of this program; it was concluded that the new integration curriculum needs more assessment and improvement to achieve the expected goals.^[5]

In the present study, we will introduce another educational theme as an extracurricular theme. Its most important aspect is focusing on psychosocial issues in medical education. This curriculum has been implemented for the undergraduate medical curriculum since 2015 in Shiraz Medical School, and we are going to discuss the evaluation of this program, which was done based on students' opinions.

Materials and Methods

The present study is a descriptive analytic one; we included all undergraduate medical students in basic sciences courses who started medical education in 2014 and 2015 in Shiraz Medical School.

Our plan for changing the medical curriculum started in October 2008, using Harden's integration ladder. For applying the reform to our new curriculum, the extracurricular theme was implemented for the first-semester medical students who entered medical school in September 2015 and the third-semester medical students who entered the medical school in September 2014 (a total number of 240 students.)

This curriculum was implemented for basic sciences courses; the first-semester program was designed to prepare the students to understand their role as medical students by assisting workshops, such as studying and learning methods, stress management, and communication skills. For the second semester, critical thinking and research methods workshops were designed. In the third semester, students experienced the new format of early clinical exposure. At last, for the fourth semester, nursing care skills for medical students workshop was implemented.

In studying and learning methods workshop, by the combination of teaching methods such as the lecture method, Socratic method, and small group teaching, different techniques of studying were introduced to the students. They applied the correct procedures in teamwork and designed a studying schedule for their first semester.

In the stress management workshop, by the combination of teaching methods such as the lecture method, Socratic method, and small group teaching, the concept of stress and ways of coping with it were explained to the students, and they practiced stress management skills in teamwork.

In the communication skills workshop, by the combination of teaching methods such as the lecture method, Socratic method, and small group teaching, the concept of communication, its importance, and the characteristics were explained to the students. They were asked to perform an example of proper and professional communication.

In the critical thinking workshop, by the combination of teaching methods such as lecture and Socratic methods, students became familiar with the definition of critical thinking, figured out its importance, and learned its phases and usage.

In the research methods workshop, by the combination of teaching methods such as lecture and Socratic methods, students became familiar with the scientific method of research, different types of research, research project performance, article writing and publishing, and congress attending.

The early clinical exposure course was carried out continuously during the whole third-semester by general surgery, internal medicine, and pediatric departments cooperation. At first, a teaching lecture was given to the students, and primary points were explained then their mentor interviewed real patients in front of them. After that, students were divided into groups to attend different wards; they were taught how to interact with patients in the clinic; they also had a chance to practice the communication skills that they had learned in previous workshops.

For the nursing care skills for medical students workshop, medical school professors had meetings with nursing school professors about the essential nursing care skills for medical students. During these meetings, they discussed the workshop's educational objectives and determined its subjects according to the evidence-based guidelines. Finally, a 3-day workshop was designed by some nursing school professors, and its objectives were fully explained. The educational department staff divided the fourth-semester medical students into two groups. Then, their names were given to the workshop organizers in the nursing school, they divided the medical students into seven smaller groups, and small group teaching method was implemented for the workshop.

Data collection instruments

Data collection instruments in the current study are the questionnaires that have been designed in three different formats. Based on the statistical consult, 100 medical students completed the questionnaires for each workshop. We devised Kirkpatrick's model for the evaluation of our workshops; this model is a four-level method for evaluating educational programs and courses. Kirkpatrick's model evaluates reaction at the first level, learning in the second level, behavior in the third level, and impact in its fourth level.^[11] We used the first and second levels for evaluating the studying and learning methods, stress management, communication skills, critical thinking, and research methods workshops. For the first level, we designed questionnaires to evaluate the overall quality of the workshop and students' reactions; it consisted of 15 questions in a five-point Likert scale format. We assigned strongly agree as 100%, agree as 80%, unsure as 60%, disagree as 40%, and strongly disagree as 20% satisfaction. For the second level, we considered 4–5 aspects for each workshop, designed five questions for

each aspect, and gave one point to each correct answer. These quizzes were held before and after each workshop as pretests and posttests. Questions of each aspect were different in the pretests and posttests, but they had similar objectives. Afterward, pretest and posttest results were compared to evaluate the students' knowledge improvement by participating in each workshop. For early clinical exposure, the course professors designed an 11-question questionnaire of the five-point Likert scale to evaluate students' satisfaction. The nursing school professors designed a questionnaire for the nursing care skills for medical students workshop; its questions were also given in a five-point Likert scale format to evaluate students' satisfaction. They developed 18 questions for the 1st day, 16 for the 2nd day, and 10 questions for the 3rd day. Cronbach's alpha for the satisfaction questionnaires of research methods, studying and learning methods, stress management, communication skills, critical thinking, early clinical exposure, and nursing care skills for medical students workshops were calculated: 0.75, 0.73, 0.77, 0.81, 0.83, 0.74, and 0.76 respectively.

After collecting all data, they were analyzed by paired sample *t*-tests in IBM SPSS Statistics for Windows, version 23.0. (IBM Corp., Armonk, N.Y., USA).

The ethics committee of Shiraz University of Medical Sciences approved this study by ethical code number IR.SUMS.MED.REC.1395.S155. The study was explained to the participants, and informed written consent to participate was obtained from all of them. Participants' scores and identities remained confidential, they took part in the study voluntarily, and they were free to withdraw at any time.

Results

According to our evaluation, students were significantly satisfied with the communication skills workshop [Chart 1]. After participating in the communication skills workshop, their knowledge about most of the workshop components improved significantly. Students' knowledge about effective communication characteristics grew the most in comparison with the four other aspects of the workshop [Table 1].

In the studying and learning methods workshop, students' overall satisfaction was lower than 60% [Chart 2]. In contrast, when we compared the pretest and posttest, a significant improvement in their learning and studying skills aspects after participating in this workshop was noticed. Time management skills improved the most after participating in this workshop [Table 2].

The overall students' satisfaction with the research methods workshop was lower than 60%. It was more

Table 1: Comparison of students' knowledge about communication skills aspects before and after the workshop

Question	Mean±SD		P
	Pretest	Posttest	
Knowledge about the characteristics of effective communication	3.4493±0.82	3.8551±0.93	<0.001
Knowledge about communication obstacles	3.4203±0.82	3.7426±0.98	<0.001
Knowledge about methods of communication	3.5072±0.72	3.8406±0.66	<0.001
Knowledge about components of verbal communication	3.4203±0.91	3.5797±0.81	<0.062
Knowledge about components of nonverbal communication	3.4203±0.88	3.8406±0.69	<0.001

SD=Standard deviation

Table 2: Comparison of students' knowledge about studying and learning methods items before and after the workshop

Question	Mean±SD		P
	Pretest	Posttest	
Knowledge about studying methods	2.8272±0.86	3.0617±0.98	<0.001
Knowledge about speed reading techniques	2.6250±0.62	2.8375±0.77	<0.001
Knowledge about learning strategies	2.6410±0.83	2.9359±0.85	<0.001
Knowledge about time management methods	2.6582±0.76	3.0000±0.95	<0.001

SD=Standard deviation

than 60% in some workshop components, such as knowledge improvement, teaching method, mentor's ability in workshop management, and mentors' ability to encourage students to participate in class discussions [Chart 3]. According to pretest and posttest comparison, students showed significant improvement in their knowledge about research methods [Table 3].

Students were significantly satisfied with the stress management workshop; their satisfaction percentage was higher than 60% in all components of the workshop [Chart 4].

Besides, the evaluation of students' learning by comparing pretest and posttest showed significant improvement in students' knowledge in all items [Table 4].

Students were significantly satisfied with all the components of the critical thinking workshop (satisfaction percentage of more than 60%) [Chart 5]. After comparing pretest and posttest, significant improvement was seen in students' knowledge about critical thinking and its components; among them, the most growth was observed with the critical thinking definition aspect [Table 5].

Students' satisfaction percentage was higher than 60% in all items of the early clinical exposure workshop [Chart 6].

The nursing care workshop was held in 3 days; students were significantly satisfied with all of the items of the 1st-day workshop [Chart 7]; it was the same for the 2nd and the 3rd day of the workshop [Charts 8 and 9].

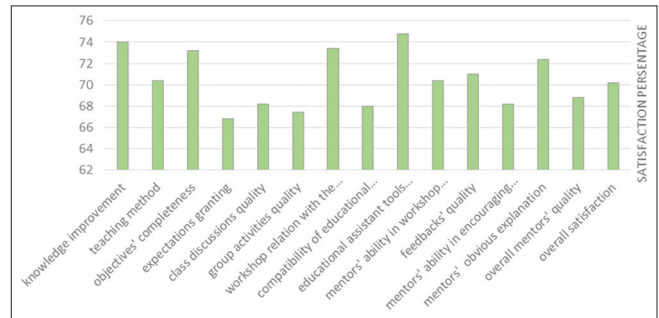


Chart 1: The results of students' satisfaction with the communication skills workshop

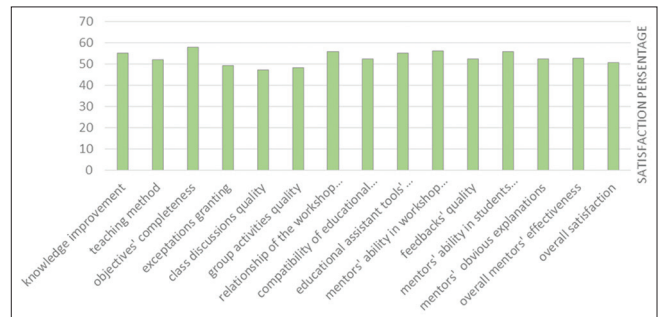


Chart 2: The result of students' satisfaction with the studying and learning methods workshop

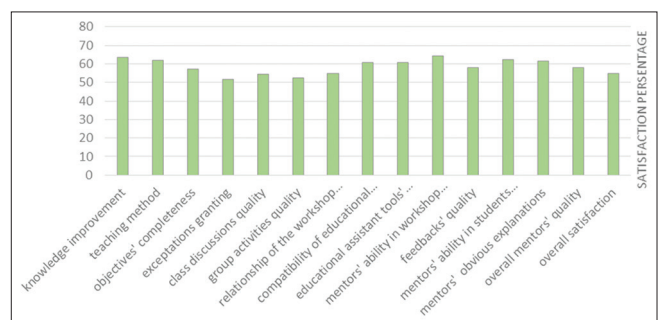


Chart 3: The result of students' satisfaction with the research methods workshop

Discussion

Medicine is a profession that comprises not only medical knowledge and skills but also requires creditable psychosocial behavior. Future doctors must be educated in other fields rather than medical sciences according to personal and social demands. They need to learn

Table 3: Comparison of students' knowledge about research methods aspects before and after the workshop

Question	Mean±SD		P
	Pretest	Posttest	
Knowledge about steps of researching and types of research	2.7978±0.78	3.1910±0.83	<0.001
Knowledge about performing a research project	2.7303±0.68	3.0899±0.79	<0.001
Knowledge about writing a proposal or an article	2.5114±0.56	2.8750±0.65	<0.001
Knowledge about publishing an article	2.5114±0.76	2.8636±0.79	<0.001

SD=Standard deviation

Table 4: Comparison of students' knowledge about stress management aspects before and after the workshop

Question	Mean±SD		P
	Pretest	Posttest	
Knowledge about stress management strategies	3.2564±0.99	3.5513±0.97	<0.001
Knowledge about signs of stress	3.1923±0.89	3.5000±0.80	<0.001
Knowledge about mind relaxation techniques	3.1026±0.79	3.4103±0.87	<0.001
Knowledge about time management techniques	3.0897±0.98	3.4872±0.91	<0.001

SD=Standard deviation

Table 5: Comparison of students' knowledge about critical thinking aspects before and after the workshop

Question	Mean±SD		P
	Pretest	Posttest	
Knowledge about critical thinking definition	3.0886±0.86	3.5570±0.98	<0.001
Knowledge about critical thinking importance	3.0506±0.88	3.3544±0.78	<0.001
Knowledge about critical thinking phases	3.0253±0.92	3.4177±0.88	<0.001
Knowledge about critical thinking usage	2.9873±0.79	3.3038±0.92	<0.001

SD=Standard deviation

these varieties of knowledge and skills to become a competent medical doctor.^[12,13] These widespread educational essentials may not be fit into the main curriculum of medical education. Therefore, varieties of training methods and themes have been proposed and implemented worldwide in medical schools to achieve the vital goal of training the most sophisticated and competent medical doctors.

At the Shiraz Medical School, we implemented extracurricular theme for undergraduate medical students, consisting of communication skills, studying and learning methods, stress management, research methods, critical thinking, early clinical exposure, and nursing care skills for medical students workshops. We also evaluated this theme to find out the improvement that this program has caused and its deficiencies. In a study conducted at Tehran University of Medical Sciences, School of Medicine, their curricular committee

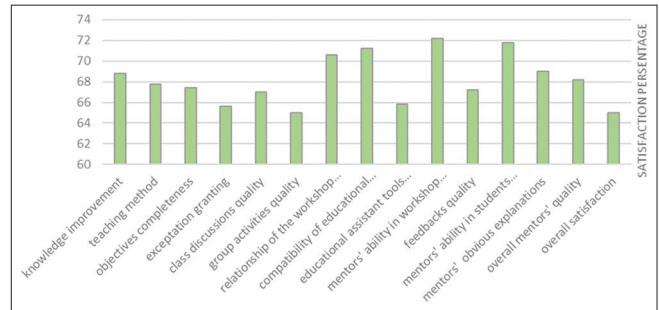


Chart 4: The result of students' satisfaction with the stress management workshop

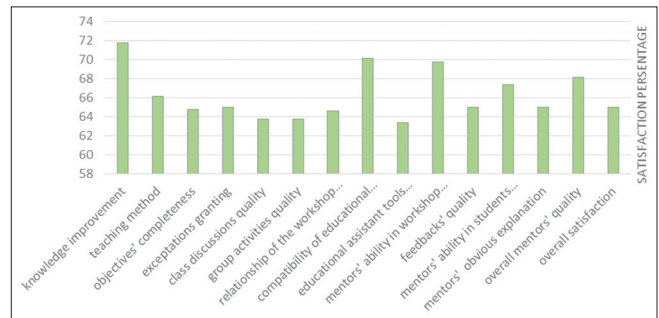


Chart 5: The result of students' satisfaction with the critical thinking workshop

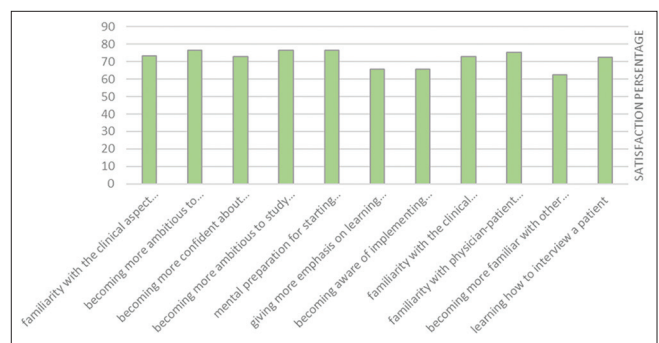


Chart 6: The results of students' satisfaction with the early clinical exposure workshop

implemented a longitudinal curricular theme for medical students who entered medical school in 2011. Their theme focused on psychosocial education, ethics, clinical skills, and familiarity with the health system. In terms of content, our extracurricular theme was similar to theirs; however, as theirs was a longitudinal theme in nature, it was implemented for the whole 7 years of medical school, but ours was only applied for undergraduate basic science medical courses.^[14]

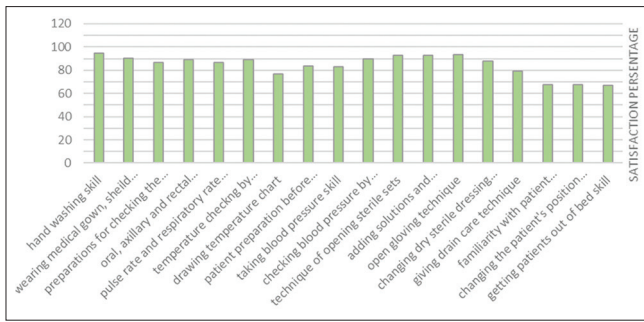


Chart 7: The results of students' satisfaction with the nursing care workshop the 1st day

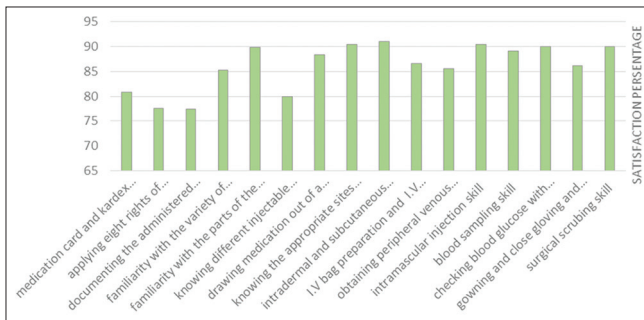


Chart 8: The results of students' satisfaction with the nursing care workshop the 2nd day

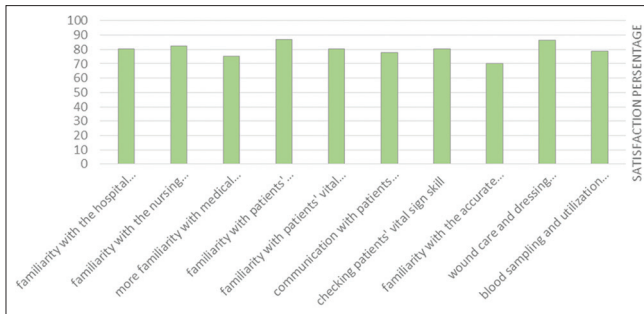


Chart 9: The results of students' satisfaction with the nursing care workshop the 3rd day

At the University of Texas Medical Branch, School of Medicine, curricular planners implemented a course 1 week before the beginning of their 3rd year of clinical courses, which was similar to our early clinical exposure and nursing care workshop. On the other hand, some subjects different from our program were applied as a longitudinal theme in their medical school. They mostly focused on public health, healthcare economics and policy, evidence-based medicine, and professionalism.^[15] Some more different subjects were offered at Aga Khan University; they integrated humanity and social sciences, bioethics, and behavioral sciences in their medical education curriculum.^[12]

The topics of these courses, methods of teaching, and medical education level in which the course will be offered may be different in various medical schools,

but they all have one common purpose, which is educating meta-competent medical doctors for their society. Harden *et al.* explained a three-circle model for classifying learning outcomes; according to their model, the inner circle illustrates the fundamental abilities that someone is expected to have as a medical doctor, as doing a general physical examination. The middle circle explains the way the medical doctor does the task that has been learned through the inner circle; this includes critical thinking, decision-making, and situation analysis. The outer circle represents the development of a person as a medical doctor; this outer circle is explained as meta-competencies, which without it, a medical student cannot become an excellent medical doctor in the future.^[16]

After designing and implementing a medical curriculum, curricular planners need to evaluate their program to understand the improvement it has caused and its deficiencies.^[6] According to the evaluation of the extracurricular theme, the overall satisfaction of our medical students was more than 60% in most aspects of the theme, and students became more familiar with their future profession. Still, overall, students' satisfaction with studying and learning methods workshop and research methods workshop was lower than 60%; it is maybe because of the more theoretical characteristic of these workshops. Making these workshops and subjects more practical will be beneficial for future courses and themes.

The advantage of our extracurricular theme was focusing on both theoretical and practical issues. On the other hand, one of its limitations was implementing the theme in a single center. Further, our program's evaluation was only based on reaction and learning, which lacked students' behavior evaluation, especially in clinical wards.

Conclusions

Medical students are the intelligent and promising members of each society, and of course, they are able to become meta-competent future medical doctors. They will not only have the ability to get the medical knowledge and skills but also will be able to approach complicated cases, communicate efficiently and appropriately with their colleagues and patients, dynamically update their knowledge, and therefore reach individual development as a medical doctor. In other words, they can reach all of the learning outcomes described in the three-circle model of learning. This fundamental goal cannot be achieved by implementing a medical curriculum which only contains medical literature. Some extracurricular issues based on students' and societies' requirements in the format of educational themes must be added to

the main curriculum. The whole curriculum must be evaluated continuously, and required changes must be applied over time.

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Conflicts of interest

There are no conflicts of interest.

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