

EVALUATION OF MEDICAL CURRICULUM

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The primary mission of the curriculum of medicine is to educate medical students in humanistic, scientific and practical principles of medicine in keeping with the emerging needs of society. Therefore, an effective, dynamic curriculum that serves its students and supports its teaching faculty must be continually reviewed to determine its quality and how students perform within it.

The main objective of this study was to identify the strengths and weakness of the curriculum of physiology in medicine according to students and teachers' view.

A survey research was designed to find the strengths and weakness of the curriculum of physiology as one of the most important basic sciences subject for medical students. This study was done in Shiraz Medical school.

According to the teachers and students' view the curriculum content of physiology in medical basic sciences curriculum and its objectives is clear and useful but the most problematic area is related to the time organization of the program.

The primary objective of curriculum evaluation is the overall improvement of the medical student's education. Traditionally, curriculum evaluation has been limited to the appraisal of medical student performance. It is more effective to use different tools for evaluation of different areas in medical curriculum.

Keywords: *Medical curriculum, curriculum evaluation, medical education, student learning, instructional assessment*

Introduction

Three factors—curriculum, instruction, and assessment—form the basis of student learning in every medical college. (Figure 1) Although each factor is important, the role of the instructor is central to the College's mission to provide excellence and opportunities for students. Good instruction is the foundation for student learning.

The curriculum is another factor also related to student success. Coherent and relevant courses and programs provide the knowledge, skills, and attitudes to be taught by instructors within the courses they teach.

Assessment is the third critical factor in student learning. By checking to see what has actually been learned through their instruction, faculty can reinforce those concepts

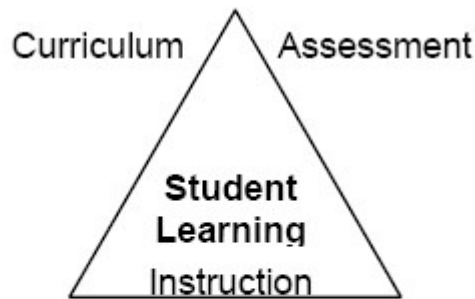
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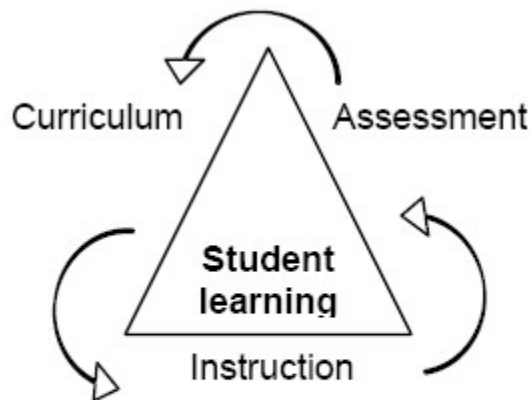
in which students need additional study. Courses and programs can be revised using these assessment results.

Figure 1: Critical Factors in Student Learning



In addition to being important factors in student learning, these three elements are also part of an ongoing process of curricular and instructional renewal. (Figure 2) Beginning with a strong, coherent curriculum, knowledgeable and skilled instructors implement the courses and programs they have designed. At regular intervals, faculties assess and evaluate their students' performance, and use this information to refine individual courses and to revise these programs. (2)

Figure 2: A Cyclical Process of Renewal



Assessments reveal the parts of the curriculum in need of revision, or the instructional strategies that need to be modified. The assessment cycle then continues to determine the effects of these changes, as further assessments are conducted in the revised courses and programs.

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emerging needs of society. Therefore, an effective, dynamic curriculum that serves its students and supports its teaching faculty must be continually reviewed to determine its quality and how students perform within it. (1)

The following are the general goals of the curriculum evaluation system:

1. To ensure that the curriculum is “appropriate” for the education and development of competent physicians.
2. To assess whether the measurement tools are “appropriate” to gather data about the effectiveness of the programs.
3. To update deans, teaching faculty and students as to the effectiveness of the educational program. (4)

When evaluating courses of instruction, most medical educators focus on three specific areas: *Program*, *Process*, and *Participants*.

Program

Evaluation involves a critical look at the content, goals, objectives, and evaluation methods of a course. The usual tool utilized is a questionnaire completed by the students at the end of their course in which different aspects of instruction and student experiences are evaluated. The results of this questionnaire are often the only evaluation utilized to make changes in curriculum content and in curriculum implementation.

Process

Evaluation refers to the analysis of the way the program is implemented.

Participant

Evaluation includes an analysis of the attitudes and performance of students and faculty. Measurement of the outcomes of graduates is also a part of participant evaluation. (5)

Different areas of curricular evaluation can be done with different evaluation tools, as mentioned below:

- *Program evaluation tools*
 - Review of goals and objectives for relevance
 - Review of teaching quality (direct observation and questionnaire)
 - Student admission data
 - Accreditation reports
 - Alumni surveys
 - Curriculum mapping
- *Process evaluation tools*
 - Questionnaires to assess attitudes

- Direct observations of the learning environment
- Interviews with faculty and students
- Debriefing sessions with students at end of course
- Review of test questions for validity and reliability
- *Participant evaluation tools*
 - Objective and subjective testing of students
 - Grade distributions
 - Feedback sessions for students and faculty
 - Peer evaluation
 - Outcome studies (3)

Objective

The main objective of this study was to identify the strengths and weakness of the curriculum of physiology in medicine according to students and teachers' view.

Methods

This is a descriptive survey research. A descriptive study describes and interprets what *is*. It is concerned with conditions and relationships that exist, opinions that are held, processes that are going on, effects that are evident, or trends that are developing. To determine teachers and students' opinion about the curriculum of physiology as a basic science subject for medical students, a self- managed questionnaire designed. Nine faculty members of the department of physiology and 53 medical students were participated in this study.

Content validity of the questionnaire was checked by 3 Iranian educational experts. They reviewed and gave their points of view. According to their suggestions, the questionnaire modified and distributed to 30 students to check the reliability. Cronbach's Alpha used for reliability and revealed $r = 0/95$.

Results

Findings of this study indicate all faculty members in the department of physiology agree with different dimension of curriculum content, but time organization for delivery the content of basic sciences to medical students is more problematic in teachers' view. (Table 1).

According to teachers view teaching methods and available facilities in classrooms and laboratories are in a good positions (Table 2, 4), but most of teachers believe examinations are also problematic area in this subject. (Table 3) (The only method used for examinations is MCQ (multiple choice questions)).

Table 1
Distribution of Teachers and Students' View About Curriculum Content

Curriculum content	Teachers' view		Students' view	
	Agree N (%)	Disagree N (%)	Agree N (%)	Disagree N (%)
Enough content	9 (100)	0 (0)	48 (90.6)	5 (9.4)
Good relevancy	9 (100)	0 (0)	47 (92.2)	4 (7.8)
Clear objectives	9 (100)	0 (0)	41 (91.1)	4 (8.9)
Good achievement level	8 (88.9)	1 (11.1)	33 (82.5)	7 (17.5)
Effective program	8 (88.9)	1 (11.1)	44 (88)	6 (12)
Appropriate time organization	7 (77.8)	2 (22.2)	33 (66.8)	16 (33.4)

Table 2
Distribution of Teachers and Students' View About Teaching Method

Teaching method	Teachers' view		Students' view	
	Agree N (%)	Disagree N (%)	Agree N (%)	Disagree N (%)
Appropriate teaching method	8 (88.9)	1 (11.1)	43 (93.5)	3 (6.5)
Appropriate audio-visual aids	9 (100)	0 (0)	45 (93.8)	3 (6.3)
Effective communication	9 (100)	0 (0)	37 (80.4)	9 (19.5)

Table 3
Distribution of Teachers and Students' View About Examinations

Examination	Teachers' view		Students' view	
	Agree N (%)	Disagree N (%)	Agree N (%)	Disagree N (%)
Good reflect of course content	6 (66.7)	3 (33.9)	34 (73.9)	12 (26.1)
Emphasize on understanding	6 (66.7)	3 (33.9)	26 (56.5)	20 (43.5)
Appropriate feedback	6 (66.7)	3 (33.9)	36 (85.7)	6 (14.3)

Table 4
Distribution of Teachers and Students' View About Educational Resources

Resources	Teachers' view		Students' view	
	Agree N (%)	Disagree N (%)	Agree N (%)	Disagree N (%)
Useful handouts	8 (88.9)	1 (11.1)	33 (71.7)	13 (28.3)
Available textbooks	6 (66.7)	3 (33.3)	42 (85.7)	7 (14.2)
Effective service support	9 (100)	0 (0)	33 (86.8)	5 (13.2)
Good classrooms' facility	9 (100)	0 (0)	42 (91.3)	4 (8.7)
Good laboratory facility	8 (88.9)	1 (11.1)	43 (87.8)	6 (12.2)

According to students' view the most problematic area in this curriculum is in time organization for delivery the content and 43.5% of them reported that examinations don't emphasize on understanding. (Table 1-4).

Spearman's correlation in the Table 5 indicates there is significant correlation ($P < 0.05$) between teachers' views in examination and resources, and the quality of education in the department of physiology has significant relationship with teaching method.

Spearman's correlation in the Table 6 indicates there is significant correlation ($P < 0.001$) between students' views in curriculum, teaching method, examination and resources, and the quality of education in the department of physiology has significant relationship with this four dimension of curriculum.

Table 5
Correlation of Teachers' View Between Curriculum, Teaching Method, Examination, Resource and Quality of Education in the Department of Physiology

<i>Correlation coefficient</i>	<i>Curriculum</i>	<i>Teaching method</i>	<i>Examination</i>	<i>Resources</i>	<i>Quality of education</i>
Curriculum	-	0.044 (0.911)	0.543 (0.131)	0.603 (0.086)	0.097 (0.804)
Teaching method	0.044 (0.911)	-	0.489 (0.182)	0.371 (0.325)	0.710* (0.032)
Examination	0.543 (0.131)	0.489 (0.182)	-	0.862* (0.003)	0.622 (0.074)
Resources	0.603 (0.086)	0.371 (0.325)	0.862 (0.003)*	-	0.463 (0.210)
Quality of education	0.097 (0.804)	0.710* (0.032)	0.622 (0.074)	0.463 (0.210)	-

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Table 6
Correlation of Students' View Between Curriculum, Teaching Method, Examination, Resource and Quality of Education

<i>Correlation coefficient</i>	<i>Curriculum</i>	<i>Teaching method</i>	<i>Examination</i>	<i>Resources</i>	<i>Quality of education</i>
Curriculum	-	.573** .000	.573** .000	.566** .000	.482** .000
Teaching method	.573** .000	-	.473** .000	.448** .001	.560** .000
Examination	.573** .000	.473** .000	-	.583** .000	.484** .000
Resources	.566** .000	.448** .001	.583** .000	-	.351* .014
Quality of education	.482** .000	.560** .000	.484** .000	.351* .014	-

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Discussion

According to the teachers and students' view the curriculum content of physiology in medical basic sciences curriculum and its objectives is clear and useful but the most problematic part in this course (program) is related to the time organization of the course, type of examinations, and available educational resources. The availability of

textbooks is limited for students, then they use handouts and the usefulness of handouts is questionable.

Conclusion

The curriculum is intended to provide a set of knowledge, skills and behaviours that encompass a broad overview of the practice of medicine and is relevant to becoming a competent caring physician regardless of subsequent specialty choice. The primary objective of curriculum evaluation is the overall improvement of the medical student's education. Traditionally, curriculum evaluation has been limited to the appraisal of medical student performance. It is more effective to use different tools for evaluation of different areas in medical curriculum.

Quantitative methods such as attitude scales and National Licensing Exams, and qualitative methods such as interviews with faculty and direct observation of clinical performance can be utilized in gathering the necessary data to determine the curriculum adequacy. Ideally, a combination of both methods should be used: quantitative methods to minimize error, ensure good sampling and control variables inherent to the particular training program; qualitative methods to ensure that the fluid, dynamic, and real world nature of the instructional process is taken into account.

Suggestion and Recommendation

Curricular Assessment is a form of systematic inquiry that should result in improvement or accountability. An organization's focus on achieved student learning is critical not only to promoting and improving effective curricular learning experiences and to providing evidence of the quality of educational experiences and programs, but also to enhancing the public's perception of the value of higher education.

Assessment in higher education should be designed to measure the effectiveness of the program in producing student learning within a deliberately-designed curriculum.

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