

Evaluation and Analysis of Curriculum Reform of Organs System from Medical Students' Perspective

—Take Qiqihar Medical University as an Example

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Abstract—Currently, the curriculum reform of organ system at medical universities is conducive to increasing interdisciplinary connections, training medical students' clinical thinking and improving their ability to study independently. However, some students cannot adapt to or accept this curriculum model. We conducted a questionnaire survey on the satisfaction of the integrated courses of organ system among students admitted to Qiqihar Medical University in 2012 to study the advantages and disadvantages of the curriculum reform from the perspective of medical students, to evaluate its teaching results, and to provide the basis needed for curricular reform of organ system.

Keywords—*Medical Students' Perspective; Organ System; Curriculum Reform; Evaluation*

I. INTRODUCTION

With the rapid development of medicine and the expansion of medical knowledge, the requirement to doctors is getting stricter. In 1952, the Medical School of Case Western Reserve University first proposed "Organ-system Based Learning" or OBL) model. [1]According to this new model, curriculums should be reorganized according to the organ system to enhance interdisciplinary integration and the close link between basic knowledge and clinical experience [2]. The OSC-centered teaching model is a new curriculum system, under which the traditional horizontally stacked courses are cross-blended and replaced by a new vertical course structure with the organ system as the framework. The new model not only helps students to form a clear knowledge framework based on organ system, but also avoids inefficient duplication of horizontal stack-ups, allowing students to get in touch with clinic as soon as possible. OSC is one of the mainstream trends in curricula reform in medical colleges and universities abroad. It is also a hot spot in the teaching reform of medical universities in China. Its depth and breadth are constantly being strengthened. Since the 1990s, universities such as China Medical University, Shantou University, Huazhong University of Science and Technology, Shanghai Jiaotong University, Huaxi Medical University and the Fourth Military Medical University have introduced the curriculum reform

program of organ system integration. Since the beginning of the 21st century, more and more domestic medical universities have joined in the reform. Experimental Class 2012 of Qiqihar Medical University is also one of them. With the continuous deepening of organ system curriculum reform, the evaluation of students as the subject of curriculum system should not be ignored [3]. Here we'll get to know and analyze the phenomenon from medical students' perspective.

II. RESEARCH OBJECTS AND METHODS

A. Study object

50 students in 2012 experimental class of Qiqihar Medical University, including 16 males, 34 females. The class has been practicing "Organ-system Based Learning" model since the first year, containing respiration, digestion, circulation, urinary, genital, immunity and blood systems, with organ system reconfiguration course content as framework, it has integrated medical morphology and ergology, with normal and abnormal, basic and clinical combination, strengthened relations between different disciplines, and greatly reduced the traditional interdisciplinary repetition. And clinical teaching modules include two parts: clinical course learning and practice connecting with each system, clinical practice and improvement. Meanwhile innovate teaching methods, carry out PBL teaching and autonomic learning, encourage students to integrate what they have learned and improve knowledge application ability. It has been almost five years and each integration course has been implemented teaching methods such as PBL and TBL, so the students have a certain level of awareness.

B. Research methods

The research object is 50 students from Experimental Class 2012 of Qiqihar Medical University, including 16 boys and 34 girls. The revision of the experimental class training program is completed in 2012, so they are the first batch of students for OBL. And in each semester, teaching methods like PBL and TBL are used for the teaching of integrated curriculums, which include respiratory, digestive, circulatory, urinary, reproductive, immune, blood and other systems. Based on the restructured courses of the organ system, medical morphology

and functional science, the normal and the abnormal, basic and clinical are integrated. Interdisciplinary links are strengthened and the duplications are reduced. The clinical teaching module includes coursework, internship, and clinical practice connecting each system. At the same time, teaching methods are reformed. PBL teaching and self-study are encouraged to help students reorganize their knowledge and improve its application. Nearly five years have passed by now, so they have acquired a certain level of cognition about it.

C. Statistical analysis

Statistical analysis is conducted with the software SPSS 22.0.

III. RESULTS

Fifty copies of the questionnaire are handed out and all of them are returned. By taken into account the findings and the interviews, the conclusions are as following:

A. The advantages of organ system courses

In the questionnaire, we've found that 70% of the respondents think that the integrated courses of organ system

help reduce the overlap of subjects and thus reduce the burden of stud; 94% of them think that the reform helps increase disciplinary relations, making it easier for students to grasp the knowledge; the vast majority (98%) think the courses can help improve clinical thinking; the majority (94%) think it conducive for their self-learning ability; 88% think the PBL teaching method can help students grasp knowledge and improve their abilities. Regarding whether the integrated courses help reduce the learning burden, 70% of them hold positive attitude, while the rest think otherwise. The results of the interview have verified the findings of the questionnaires. However, some of the students interviewed believe that medical learning is supposed to be a difficult process and reducing the burden on students is not the purpose no matter what kind of curriculum system is adopted.

B. The disadvantages of organ system courses

The lack of well-established teaching material has become the most important issue. Also, about half of the respondents also think that changing teachers frequently affects the teaching results. 38% find curriculum unreasonable and 26% say they cannot adapt to the integrated model.

TABLE I. EVALUATION RESULTS OF THE ORGAN SYSTEM COURSES BY EXPERIMENTAL CLASS

No.	Evaluation items	Results (%)	
		YES	NO
1	Can the courses help reduce the overlaps of the subjects and thus reduce the learning load?	70	30
2	Can the courses help increase disciplinary relations, making it easier for students to grasp the knowledge?	94	6
3	Can the courses help improve clinical thinking of students?	98	2
4	Are the courses conducive for self-learning abilities?	94	6
5	Can teaching methods like PBL help students grasp knowledge and improve their abilities?	88	12
6	Are you skeptical about it and cannot adapt to the newly changed mode?	26	74
7	Do frequent replacements of teachers affect the teaching results?	52	48
8	Are teaching arrangements reasonable?	62	38
9	Is there systematic and sound course system?	14	86

IV. DISCUSSION

The findings and analysis:

A. Positive impacts of organ system curriculum reform

It is not difficult to tell that the integrated courses are better than traditional ones in terms of integration of knowledge and its connection with basic clinical experience. With the newly revised courses, overlaps of various disciplines are reduced and time is saved so that students will have more time for independent learning. So, students' learning burden is reduced to some extent. Courses of organ system increase the knowledge linkages among disciplines, making the learning process a "longitudinal axis"; the mastery of knowledge also becomes coherent, which facilitates the learning and memory process. [4] The combination of basic and clinical knowledge help students develops clinical thinking; learning of clinical knowledge will in turn deepen students' understanding of basic knowledge. The new organizational system pays more attention to students' self-learning and problem-solving skills. The integration has converted the traditional "discipline-centered" curriculum

system into an integrated curriculum of OSC, where basic and clinical knowledge are intertwined and supplemented by comprehensive teaching methods such as PBL teaching, online learning and independent learning. It requires teachers to attach more importance to students' clinical thinking, subjective initiative, as well as the ability to spot and solve clinical problems. It also requires teachers to give up the traditional cramming teaching to fully mobilize the enthusiasm of students; heuristic, discussion-based and especially problem-based teaching methods should be adopted. The courses can improve students' independent learning ability and develop their problem-solving abilities. PBL and other teaching methods inspire students to think and actively participate in the classroom discussions so that the impression of the courses is deepened. In addition, students' access to literature, team spirit will be strengthened; their abilities to acquire knowledge, ask questions, analyze and solve problems orally defend themselves and the ability for summaries and reports will also be enhanced. Traditionally, the knowledge of medical teachers comes from the "discipline-centered" teaching model. For many years, they have been mainly engaged in the teaching of a certain subject. Their unique teaching methods have become the main models passing on

knowledge to students and cultivating their abilities. The implementation of OSC makes it imperative that teachers cooperate with other teachers and research staff to integrate course modules of organ system, break the of single subject teaching ideology, and effectively implement the deletion and reorganization of teaching contents after full communication.

B. Negative impacts of organ system curriculum reform

The lack of textbooks of organ system is the main issue of curriculum reform. [5] Under this circumstance, students still need to bring the corresponding textbooks. Teachers cannot guarantee there is no duplication of subject knowledge; for students, no fixed textbook will lead to inconvenience when they prepare for the final exam. Some students do not think the reform can help reduce the learning burden, which may be related to the following factors: unreasonable curriculum arrangement, lack of good teaching materials, teachers' failure to make changes in teaching methods to meet the needs of curriculum reform, students not being able to adapt to the new teaching model. Frequent replacement of teachers also affects the teaching results because it's difficult for students to get used to different teaching methods. More curriculum content, shorter teaching and learning cycle, and immature curriculum integration experience result in the unreasonable curriculum and class schedule. Students are vague about and skeptical of the curriculum integration, so it is hard for them to adapt to the change.

V. OPINIONS AND SUGGESTIONS

Given the above-mentioned shortcomings, we try to make the following comments and suggestions for readers' reference.

First of all, the university needs to step up publicity of the curriculum reform, so that students have a full understanding of it. Understand the meaning of its existence will help students accept the curriculum reform from the bottom of their hearts. Before the implementation of the PBL teaching method and formative assessment, students should be given the chances to learn about these new teaching and assessment methods through demonstration teachings and theoretical trainings so that they can adjust their learning methods as soon as possible. Training for teachers of integrated courses should be intensified. Teachers should be asked to observe the teaching process, especially that of other subjects. High-quality and high-standard teachers who meet the needs of reform and can independently teach an integrated course should be cultivated.

Secondly, students should actively communicate with teachers about their own views on the curriculum reform, what shortcomings and problems they have found. Any good suggestions and opinions should be told to their superiors in a timely manner. The suggestions of students should be taken into account when it comes to the revision and arrangements of the curriculum. Experience of other universities and institutions should also be absorbed. The universities involved in the reform should start to prepare high-quality textbooks suitable for their own students as soon as possible. Or, they can participate in the compilation of and then use nationally unified curriculum.

Thirdly, the PBL teaching method poses higher challenges and requirements for teachers because they are trained under the traditional teaching methods and are proficient in the traditional way of teaching. The PBL teaching method requires teachers not only be proficient in basic medical knowledge, clinical medicine knowledge and clinical thinking, but also grasp the medical ethics, social medicine, law, psychology, behavioral science and other interdisciplinary knowledge. Only in this way can they be competent leaders and help their students better discuss and share their perspectives.

VI. CONCLUSIONS

In summary, the medical community has already reached a consensus on the teaching reform of organ system courses and it has become a hot topic in the world. [6] Adapting to the rapid development of medicine, its very existence is both certain and necessary. The advantages of the course reform lie in that it helps increase discipline connection, develop clinical thinking of students, and improve their ability of independent study. The teaching methods like PBL can be also conducive for course learning because it increases students' independent study time to a certain extent. Disadvantages lie mainly in the lack of a systematic and integrated textbook. The frequent replacement of teachers, the unreasonable class schedule and outdated learning methods are also problems. Curriculum integration is a systematic reform. Overall arrangements are needed for the curriculum reform, teaching philosophy, teaching methods, teacher training and textbooks so as to achieve better teaching results.

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