

# Effect Evaluation of “Organ System-Centered” Course in Clinical Teaching

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## Abstract

**Objective:** To evaluate the effect of applying the integrated teaching method of clinical medical courses centered on organ system in clinical teaching.

**Methods:** 120 clinical medical students of grade 2019 in our school were selected as the research object, and divided into experimental group and control group according to different teaching methods. The control group was given the conventional teaching method, and the experimental group was given the organ system-centered curriculum integration teaching mode on the basis of the control group. The teaching effects of the two groups were compared. **Results:** Experimental medical students' final examination scores, case analysis ability and satisfaction of teaching mode in the experimental group were significantly higher than those in the control group ( $P < 0.05$ ). **Conclusion:** Using the integrated teaching method of clinical medicine courses centered on organ system in teaching has a significant effect on improving students' comprehensive learning ability.

## Keywords

Organ System, Clinical Medicine, Case Analysis, Teaching Mode, Satisfaction, Curriculum Integration

## 1. Introduction

In the traditional teaching activities, the “subject-centered” medical education mode has been the leading factor, which has been followed from primary school, junior high school to university education, and has been widely used, and it has also formed a deep-rooted thinking mode of “you teach me to learn” for students (Abraham & Singaram, 2019). However, with the division of disciplines

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becoming finer and finer, while the systematization and integrity are constantly strengthened, there are some problems, such as the repetition of content among disciplines, the lack of connection between disciplines, and the disconnection between basic and clinical. As a result, many students forget before learning. The “organ system-centered” teaching mode has gradually become perfect through the practice in the teaching process in recent years, which can not only make up for the deficiency of the traditional education mode, but also have a remarkable effect on the cultivation of students’ innovative thinking and practical ability, at the same time, it also improves the enthusiasm of medical students in the learning process and forms a good transition for medical students to enter the hospital (Cantillon & Sargeant, 2008; Carlos et al., 2016). In order to explore the effect of integrated teaching method of basic medical courses centered on organ system, this paper compares traditional teaching methods with organ system-centered teaching methods, and makes the following analysis.

## 2. Materials & Methods

### General information

120 clinical medical students of grade 2019 in our hospital from March to July, 2021 were selected as the research object, with 60 students in each group. Among the 60 people in the control group, there are 33 boys and 27 girls, with an average age of  $(21.46 \pm 0.21)$  years. Among the 60 people in the experimental group, there are 31 men and 29 women, with an average age of  $(21.23 \pm 0.47)$  years. They are divided into experimental groups according to different teaching methods. All students are aware of this research.

### Methods

Before the experiment, the case analysis ability and basic knowledge level of the two groups of students were tested. There was no significant difference between the scores of the control group and the experimental group.

In the control group, the traditional teaching method was adopted, and the four principles courses of internal medicine, surgery, systematic anatomy and pathology, the eighth edition undergraduate textbook of People’s Health Publishing House, were used for study. Teachers gave lectures according to the contents of their syllabus, and explained the contents of these basic courses in detail in terms of key points and difficulties. On the basis of the teaching of the control group, the experimental group combined with the organ system-centered teaching method. The specific methods are as follows.

1) Before conducting the organ system-centered teaching method, the instructor should receive short-term training to understand the teaching purpose and method of organ system-centered teaching method, and fully understand it. Before teaching, it is necessary to formulate a teaching plan according to the existing syllabus (Liu, 2011).

2) In order to ensure the scientific and reasonable teaching content, the instructor should introduce the significance, content and teaching purpose of or-

gan system-centered teaching method to the students in the experimental group in advance, so that the students can have a better understanding of it.

3) Before the start of the course, students need to do a good job of preview before class, consulting relevant materials, and actively making preparations for class discussion and speech content, so as to improve classroom learning efficiency.

4) Under the guidance of the instructor, make students understand the links among courses of internal medicine, surgery, systematic anatomy and pathology. During the course of teaching, students will be explained according to the requirements of the syllabus, so that they can fully grasp the key contents of the course, and then the lecturers will select the relevant cases according to the contents of this course for curriculum integration (Kuai, 2011). Cases need detailed information such as past history, current medical history, clinical manifestations, laboratory examination, drug treatment, and prognosis. In the discussion session, teachers should encourage students to speak up, actively discuss, and boldly put forward their own ideas, so as to deepen their understanding of diseases and enrich their knowledge. After the discussion, the instructor made a unified comment and explanation. Summarize the problems according to the students' views, affirm the advantages, point out the shortcomings, further link the basic courses, construct the knowledge system, and deepen students' understanding and memory.

#### **Observation indicators and effect evaluation**

Satisfied with the basic knowledge examination results, case analysis ability and teaching mode of the two groups of students. The indexes of three aspects are compared. The content of basic knowledge assessment is the key point in textbooks, and teachers have taught it in the classroom. The content of case analysis ability assessment includes: students' ability to understand and judge detailed information such as the detailed past history, current medical history, clinical manifestations, laboratory examination, drug treatment, disease prognosis, and case writing ability. The results of basic knowledge assessment and case analysis ability are all conducted by the examination paper, with 100 points for each subject. Teaching model satisfaction refers to students' evaluation of traditional teaching and new teaching model, which is divided into three evaluation criteria: satisfaction, basic satisfaction and dissatisfaction. Satisfaction = (number of satisfied people+basic satisfied people)/total number of people  $\times$  100%.

#### **Statistical methods**

SPSS 21.0 statistical software was used for processing. The counting data was expressed by (%), the comparison between groups by  $\chi^2$  test, the measurement data by ( $\bar{x} \pm s$ ), and the comparison between groups by t test.  $P < 0.05$  indicates that the difference is statistically significant.

### **3. Results**

Comparison of two groups of students' daily assessment results: The average score of daily examination of 60 medical students in the control group was

(76.35 ± 8.24) points; the average score of daily examination of 60 medical students in the experimental group was (92.31 ± 7.58) points. The daily examination scores of students in the experimental group were significantly higher than those in the control group ( $P < 0.05$ ).

Comparison of medical record analysis ability between two groups of students: The medical record analysis ability of the experimental group was significantly higher than that of the control group, and the difference was statistically significant ( $t = 3.658$ ,  $P < 0.05$ ). See **Table 1** for details.

Comparison of two groups of students' satisfaction with teaching mode The satisfaction degree of teaching mode in the experimental group is significantly higher than that in the control group, and the differences between the two groups are uniform. ( $\chi^2 = 5.146$ ,  $P < 0.05$ ). See **Table 2** for details.

#### 4. Discussion

Looking at the medical education models at home and abroad, we find that traditional clinical teaching is mainly divided into three parts: basic courses, clinical courses and practice. The basic courses mainly include internal medicine, surgery, systematic anatomy, pathology, etc. Nowadays, most colleges and universities follow the traditional "subject-oriented" education mode, which makes the disciplines exist independently, and the knowledge of the same organ system is often studied separately in a semester or a year, resulting in the lack of contact between disciplines, repeated course contents, and students' forgetting after learning before (Dee Fink & Li, 2008). However, the integrated teaching method of clinical medicine courses centered on organ system makes up for the deficiency of the traditional teaching mode, and integrates the basic courses of various subjects. This integration is not a simple compression between disciplines, but an

**Table 1.** Medical record analysis ability of two groups of students (score,  $x \pm s$ )

Group	Medical record analysis ability score
The experimental group (n = 60)	94.73 ± 3.64
The control group (n = 60)	80.48 ± 5.83
T	3.658
P	<0.05

**Table 2.** Satisfaction of two groups of students with teaching mode (person).

Group	Satisfied	Dissatisfied	Satisfaction of teaching mode (%)
The experimental group (n = 60)	58	2	96.67
The control group (n = 60)	45	15	75.00
T			5.146
P			<0.05

organic combination of the normal anatomical positions, physiological functions, pathological changes and clinical manifestations of various organ systems (Yu, Fu, & Li, 2011; Engels, 2018; Foster, Collins, Dong, Nteff, & Pinkney, 2017), but a reorganization with “application as the purpose, clarifying concepts and strengthening application” as the teaching purpose, emphasizing the various The integration mode of clinical medicine courses centered on organ system has the advantages of practicality, continuity and comprehensiveness, which enables students to better use their basic knowledge and learn to solve clinical problems (Jiang & Qu, 2021; Nayak, Sridevi, Sahu, Nagendra, Telang, Goudappala, & Chandrakanth, 2021; Stack, 2015). Therefore, this teaching mode can enable students to get in touch with clinical practice as soon as possible and lay a solid foundation for entering the hospital in the future. At the same time, this teaching mode can improve students’ enthusiasm for learning, cultivate students’ autonomous learning ability (Winqvist, Mullane, & Williams, 2014), and improve students’ team cooperation and problem analysis ability in the course discussion. From normal to abnormal, from disease to treatment, this progressive learning mode strengthens students’ understanding of diseases, grasps the methods of drug use, conforms to students’ logical thinking habits, enables students to have an overall understanding of medicine, and at the same time cultivates students’ ability to think independently and solve problems (Li, Wang, & Wang, 2021; Li, Meng, & Wei, 2021). In this study, the experimental group that implemented the integrated teaching method of clinical medical courses centered on organ system scored higher in daily assessment and medical record analysis ability than the control group, and the difference between the two groups was statistically significant ( $P < 0.05$ ). From the comparison of two groups’ teaching mode satisfaction, the experimental group’s teaching mode satisfaction was significantly higher than that of the control group, and the difference was statistically significant ( $P < 0.05$ ).

## 5. Limitations

In this “organ system-centered” clinical practice teaching, there is no analysis and evaluation of students’ autonomous learning ability and teamwork ability. The author will consider evaluating the above contents in further research.

## 6. Conclusion

To sum up, the integrated teaching method of clinical medicine courses centered on organ system can effectively improve the teaching quality, cultivate students’ case analysis ability, autonomous learning ability and team cooperation ability in clinical teaching, and it has been widely recognized by students and played a positive role in teaching.

## Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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