

# The Application Effect of the Sandwich Teaching Method in Clinical Oncology Education

Jing Li

Department of Oncology, The First Affiliated Hospital of Zhengzhou University, Zhengzhou, Henan, China

**Abstract:** To explore the application effect of Sandwich teaching method in clinical oncology teaching. Methods: 50 internship medical students of clinical oncology in our hospital were selected, and the time interval of the selected cases was set from December 2021 to August 2024, and the research subjects were grouped into groups with reference to the method of randomized numerical table, of which 25 were in the control group and 25 were in the observation group. The control group was taught by conventional clinical teaching method and the observation group was taught by Sandwich teaching method, and both groups were required to continue teaching for 3 months. The two groups of internship medical students were statistically compared with each other in terms of teaching evaluation results and various discharge scores. Results: After teaching, the observation group's learning attitude, learning ability, teamwork ability and innovation spirit were higher than that of the control group; the scores of the objective questions and case analysis questions of the observation group were higher than that of the control group, all of which were  $P < 0.05$ . Conclusion: The application of the Sandwich teaching method in the teaching of clinical oncology is conducive to the improvement of the teaching evaluation and the performance of the students.

**Keywords:** Sandwich pedagogy, oncology

## Introduction

In the field of medical education, clinical oncology, as a discipline with strong comprehensiveness and outstanding practicality, is crucial to the cultivation of medical students' professionalism and clinical skills. As the incidence of tumors continues to rise and the rapid development of diagnosis and treatment technology, the conventional clinical teaching method gradually exposes many drawbacks. Under this teaching mode, students often passively accept knowledge, lack of active thinking and the ability to solve practical problems, and it is difficult to meet the needs of modern oncology clinical practice<sup>[1]</sup>. Sandwich teaching method, as a teaching mode that emphasizes interaction, collaboration and independent learning, has been gradually attracting attention in recent years in medical education, and its application in clinical oncology teaching is worth investigating in depth<sup>[2]</sup>. Based on this, this paper aims to explore the application effect of Sandwich teaching method in the teaching of clinical oncology, which is now described as follows according to the specific content of this study.

## 1. Information and methodology

### 1.1 General information

50 clinical oncology internship medical students of our hospital were selected, and the time interval of the selection was set from December 2021 to June 2024, and the research subjects were grouped with reference to the random number table method, of which 25 were in the control group and 25 were in the observation group. The male to female ratio was

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14:11 and 15:10 in the observation and control groups, respectively; the ages were 22 to 26 and 22 to 27, respectively; and the mean ages were  $(23.27 \pm 1.24)$  and  $(23.31 \pm 1.22)$  years. By comparing the above data (gender and age) between the two groups, it can be concluded that there is no significant difference between the two groups ( $P > 0.05$ ), so the results of this study are not affected by the underlying data and are comparable. Inclusion criteria: those whose education was not less than full-time undergraduate; those who entered our hospital for the first time; those whose previous study base was compatible, etc. Exclusion criteria: those whose internship period was  $< 1$  month; those who transferred to the hospital for study in the middle of the study period; and those who were on leave for more than 1 week during the internship period, etc.

## **1.2 Methods**

Control group (conventional clinical teaching method): (1) theoretical lectures: with the help of multimedia and slides, the instructor systematically explains the relevant chapters of the textbook to the students participating in the clinical internship, covering the causes of the disease, pathological changes, common symptoms, diagnostic criteria, and treatment and other basic knowledge. (2) Bedside practice and questioning: Teachers lead students to the patient's bedside for routine history and physical examination. After returning to the classroom, the teacher will ask the students questions and ask them to apply what they have learned and put forward their own diagnosis and treatment opinions for this case. (3) Summarizing and supplementing: The teacher will explain and supplement again according to the problems exposed in the students' feedback, and at the same time, he/she will make a comprehensive review and summary of all the knowledge points involved in this lesson, so as to strengthen the students' understanding and mastery of knowledge. Observation group (Sandwich teaching method): (1) Opening: before the start of the lesson, the lead teacher first led the students to the patient's bedside, completed the routine history inquiry and physical examination, and then returned to the classroom. The instructor briefly introduces the main content of the lecture and clarifies the learning objectives and requirements of the course based on the questions sent to the students in advance. (2) Group discussion: students will have the first group discussion, each group will focus on the questions that need to be answered, and elect a group leader to record the results of the discussion. (3) Cross-group discussion: members of the new group from different groups, members need to report to each other, discuss the results of their respective groups, and make a detailed record of the discussion. In the process of discussion, students should not only share the opinions of their own group's first discussion, but also summarize the problematic discussions of other group members. (4) Student Reporting: Each group elects a representative to report the results of the group's discussion, and the rest of the group members provide additional explanations. The teacher will understand the students' understanding and mastery of knowledge through the students' discussion and report, and clarify the students' problems. (5) Teacher's summary: The teacher will summarize and comment on the students' reports, and provide answers and guidance to the students' questions. At the same time, students will be guided to analyze the characteristics of the case based on the case information given in advance, including medical history, physical examination, auxiliary examination, etc., so as to come up with relevant diagnostic ideas. (6) Summarize and feedback: Each group selects one student to form a new discussion group to summarize the discussion in the center of the classroom. The rest of the students will speak freely around the group, discuss the typical cases given by the teaching staff, and finally summarize the correct diagnostic results and appropriate treatment options. The teacher will make a comprehensive summary of the content of the course to reinforce the key knowledge and organize the learning ideas. The teaching duration of both groups is 3 months.

## **1.3 Observation indicators**

(1) Teaching evaluation results, teaching teachers from the learning attitude to improve, learning ability to improve, teamwork ability to improve, the spirit of innovation to improve several dimensions of the teaching effect evaluation. (2) The results of each discharge, after the end of the course, in accordance with the requirements of the syllabus, designed around the apprenticeship cases test paper. The total score of the test paper is 100 points, of which 50 points are accounted for case analysis questions and 50 points are accounted for objective questions. At the end of the examination, the non-teaching teachers are responsible for the marking of the examination paper.

## 1.4 Statistical methods

The indicators were detected using SPSS 26.0, [cases (%)] for count data, line  $\chi^2$  test; ( $\bar{x} \pm s$ ) for measurement data, line t test; data results calculated using statistical software  $P < 0.05$ , that is, the difference is statistically significant.

## 2. Results

### 2.1 Results of teaching evaluation

Table1: After teaching, the number of observation group's learning attitude improvement, learning ability improvement, teamwork ability improvement and innovation spirit improvement are higher than that of the control group,  $P < 0.05$ .

Table 1 Results of teaching evaluation [Example (%)]

Groups	Number of Examples	Learning Attitude Enhancement	Learning Enhancement	Improvement of teamwork skills	Innovative Spirit Enhancement
Control Subjects	25	12(48.00)	15(60.00)	14(56.0)	13(52.00)
Observation Group	25	21(84.00)	22(88.00)	22(88.00)	21(84.00)
$\chi^2$ -value		7.219	5.094	6.349	5.992
$P$ -value		0.007	0.024	0.012	0.015

### 2.2 Achievements in various disciplines

Table2: The scores of objective and case analysis questions in the observation group were higher than those in the control group,  $P < 0.05$ .

Table 2: Achievements in various disciplines ( $\bar{x} \pm s$ , points)

Groups	Number of Examples	Objective Question	Case Analysis
Control Subjects	25	37.82±1.22	36.54±1.23
Observation Group	25	44.08±1.15	43.16±1.18
$t$ -value		18.676	19.496
$P$ -value		<0.001	<0.001

## 3. Discussion

With the incidence of tumor rising year by year, the situation of tumor prevention and treatment is becoming more and more serious, which puts forward higher requirements for the quality of teaching clinical oncology. Precise diagnosis, individualized treatment plan development and multidisciplinary collaboration are all key links in the clinical work of oncology and have become the core objectives of clinical oncology teaching<sup>[3]</sup>.

The results of this study show that after teaching, the number of observation group's learning attitude enhancement, learning ability enhancement, teamwork ability enhancement and innovation spirit enhancement is higher than that of the control group, suggesting that the application of Sandwich teaching method in clinical oncology teaching is conducive to the improvement of teaching evaluation. The reason may be: Sandwich teaching method is student-centered and changes the teacher-led mode in traditional teaching. Through case discussion, group collaboration and other interactive links, the abstract oncology knowledge is closely integrated with clinical reality, so that students feel the practicality of knowledge in the process of solving practical problems. This approach greatly stimulates students' curiosity and desire to explore, so that students change from passive learning to active learning, which in turn improves their learning attitude. During Sandwich teaching, students need to analyze, summarize and conclude complex tumor cases, which requires them to apply the

theoretical knowledge they have learned into practice, and students gradually learn how to extract the key content from a large amount of information and how to construct fragmented knowledge into a complete knowledge system, so as to enhance their independent learning ability and the ability to apply knowledge. Sandwich teaching method Setting up group discussions and cross-group discussions, students work together in groups to discuss problems and exchange ideas, and through teamwork can integrate the advantages of all parties and draw more comprehensive and accurate conclusions. And students can put forward unique insights according to their own understanding and knowledge reserves, this open teaching atmosphere provides students with a broad thinking space and stimulates students' innovative spirit.

The results of this study showed that the scores of objective questions and case analysis questions of the observation group were higher than those of the control group, suggesting that the application of Sandwich teaching method in the teaching of clinical oncology is conducive to the improvement of students' performance. The reason may be: Sandwich teaching method focuses on students' active participation and practical application of knowledge. In the case discussion session, students are able to combine the abstract theoretical knowledge of oncology with specific clinical situations through in-depth analysis of clinical tumor cases, which helps students to accurately grasp the knowledge points and make correct judgments quickly in the face of the objective questions; in the answer to the case analysis questions. Be able to articulate their thoughts in an organized manner and give reasonable solutions by applying the knowledge they have learned, so as to improve the score of answering questions. The improvement of students' ability and achievement in the learning process will also make them more satisfied with the teaching.

In conclusion, the application of Sandwich teaching method in clinical oncology teaching is conducive to improving teaching evaluation, student performance, and has a high value of popularization and application in clinical teaching.

### References

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