

Application of Multi-based Teaching in Ophthalmology Teaching

Xue Wu^{1,2,3*}

¹Inner Mongolia University for Nationalities, Tongliao 028000, Inner Mongolia, China

²Inner Mongolia Forestry General Hospital, Hulunbeier 022150, Inner Mongolia, China

³Hubei Aerospace Hospital, Xiaogan, 432000 Hubei province China

*Correspondence Author

1. Introduction

As an important part of the field of medicine, ophthalmology carries an important mission of maintaining human visual health. Ophthalmology teaching is not only the basic link to train professional ophthalmologists, but also the key force to promote the continuous progress of ophthalmology. With the rapid development of medical technology and the changing needs of patients, the traditional ophthalmology teaching mode has gradually revealed its limitations, and new teaching concepts and methods are urgently needed to adapt to these changes [1].

In the traditional ophthalmology teaching mode, we often pay too much attention to the teaching of theoretical knowledge, but ignore the cultivation of practical skills [2]. This teaching mode leads to students often master theoretical knowledge, but in the face of actual clinical operation. In addition, traditional teaching methods also lack to stimulate students' interest and initiative in learning, resulting to poor teaching effect.

In order to overcome these limitations, the concept of multi-mode teaching came into being. Multi-mode teaching emphasizes student-centered, and pays attention to cultivating students' practical ability and innovative spirit. Through the flexible use of case analysis, simulation operation, cooperative learning and other teaching strategies, it combines theoretical knowledge with practical operation, aiming to improve students' comprehensive quality and clinical ability [3,4].

It is of great significance to apply practice-based multimodal teaching in ophthalmology teaching. First, it can better meet the development needs of ophthalmology and cultivate more ophthalmologists with practical ability and innovative spirit. Secondly, multi-mode teaching can stimulate students' interest and initiative in learning, and improve the teaching effect and learning quality. Finally, through practice-based teaching methods, students can better apply theoretical knowledge to clinical practice and improve their clinical skills and coping skills.

Therefore, this study aims to explore the application of multi-based teaching in ophthalmology teaching, in order to provide useful reference and reference for improving the quality of ophthalmology teaching and cultivating excellent ophthalmologists. Through in-depth research and practical application, we are expected to bring new changes and

development to the field of ophthalmology teaching.

2. Data and Methods

2.1 General Information

In the current field of medical education, the reform and innovation of teaching methods have become an important topic to improve the quality of medical talent training. In order to explore teaching methods that can better meet the needs of modern medical education, this study selected 30 students majoring in clinical medicine in 2017 from the Second Affiliated Hospital of Inner Mongolia University for Nationalities in China to conduct a comparative study on the application of multi-mode teaching method in ophthalmology practice teaching.

In this study, we divided these 30 students randomly into study group and control group, with 15 students in each group. The research group adopts multi-mode teaching method, including case analysis, PBL teaching, clinical skill training, and the control group adopts traditional teaching method, mainly by teachers. After the teaching group, we will compare their differences in clinical quality, theoretical examination scores and teaching satisfaction to evaluate the effect of the multimodal teaching method in the teaching of ophthalmology practice.

The inclusion criteria for the study subjects are as follows: (1) five-year undergraduate clinical medicine medical students practicing in our ophthalmology department; (2) have completed relevant theoretical knowledge; and (3) agree to accept the study. The exclusion criteria are as follows: (1) those who do not cooperate with the study; (2) those who fail the examination of theoretical courses related to ophthalmology. Through these criteria, we ensured the stability and comparability of the study subjects.

As a new teaching method, multi-mode teaching method aims to stimulate students' interest in learning, improve students' active participation, and cultivate students' innovative ability and clinical thinking. Compared with the traditional teaching methods, the multi-mode teaching method can better meet the requirements of modern medical education and help to improve the comprehensive quality of medical talents.

The purpose of this study is to explore the application value of multimodal teaching method in ophthalmology practice teaching, in order to provide useful reference for medical education reform in China. Through the comparative analysis

of the two groups, we expect to find the advantages of multimodal teaching method in improving the teaching effect of ophthalmology practice, and provide reference for the future development of medical education.

In the process of implementing multi-mode teaching, teachers need to constantly adjust their teaching strategies, pay attention to students' needs and feedback, and ensure the teaching quality and effect. At the same time, the education department should also increase the research and support to the multi-mode teaching method, and promote the deepening of medical education reform. Through these efforts, we believe that the level of medical personnel training in China will continue to improve, to better serve the health needs of the people.

2.2 Methods

After entering the clinical interns, we will be assigned an experienced teacher to assess their clinical quality.

Students in the study group will be trained in a multi-modal teaching approach. The teacher will choose the common diseases of ophthalmology and introduce the clinical pathway in detail, including diagnosis, examination, differentiation, physical appearance, imaging, treatment, surgery and other contents. Students need to preview before class, actively ask for the medical history, conduct physical examination, and participate in the discussion of cases. In this process, the students need to summarize what they have learned, and the teaching teacher will supplement the knowledge of doctor-patient communication skills and diagnosis and treatment ideas, and guide the students to conduct preoperative preparation, intraoperative operation and postoperative document writing.

Students in the control group adopted the traditional teaching model. They need to follow the teaching teacher on ward rounds and passively accept the teaching content. During the ward rounds, students can ask questions, and the teaching teacher will answer the questions. Students need to issue the doctor's instructions, participate in the operation, and complete the medical record documents according to the teacher's instructions.

2.3 Observation Indicators and Evaluation Criteria

After the clinical practice, we will compare the clinical quality, theoretical performance and teaching satisfaction of the two groups. Clinical quality will be assessed by the modified Mini-CEX scale and the theoretical score will be assessed through a written test with a full score of 100. Teaching satisfaction will be collected by anonymous questionnaire survey and divided into four levels: unsatisfactory, general, satisfactory and very satisfied. Finally, the total satisfaction rate will be calculated.

2.4 Statistical Methods

We will perform the statistical analysis of all the collected data using the SPSS19.0 statistical software. Measurement data are expressed as mean \pm standard deviation ($\bar{x} \pm s$), comparisons between two groups using independent sample

t-test and paired sample t-test for within-group comparisons. Count data were expressed by rate, using χ^2 checkout. $P < 0.05$ was set to be statistically significant.

Through the above detailed expansion, we can see the rigor of the research method and process, as well as the importance of the clinical quality and teaching effect of interns. Both the study group and the control group focused on the practical operation and theoretical study of the students, aiming to improve their clinical competence. The final evaluation and investigation is the direct feedback on the teaching effect, which helps us to continuously optimize the teaching methods and improve the quality of teaching.

3. Results

3.1 Comparison of the Theoretical Examination Results of the two Groups After the Internship

The difference between the study group and the control group in the internship theory examination was statistically significant ($P < 0.05$) (Table 1).

Table 1: Comparison of post-internship theory examination scores of students in study group and control group (score, $\bar{x} \pm s$)

	Study group (n=15)	Control group (n=15)	t	P
Theoretical examination results	85.640 \pm 6.22	76.582 \pm 7.525	3.59 34	0.0 006

3.2 Comparison of the Skills Test Results of the Two Groups

The difference between the study group and the control group in the internship skills test was significant ($P < 0.05$) (Table 2).

Table 2: Comparison of post-internship skills test scores of students in study group and control group (score, $\bar{x} \pm s$)

	Study group (n=15)	Control group (n=15)	t	P
Skill test results	81.252 \pm 6.223	74.001 \pm 6.112	3.2196	0.003

3.3 Comparison of Teaching Satisfaction between the Two Groups After Practice

The teaching satisfaction between the study group and the control group was not significant ($P > 0.05$) (Table 3).

Table 3: Comparison of teaching satisfaction between study group and control group [n (%)]

	Study group (n=15)	Control group (n=15)	χ^2	P
Total satisfaction rate, n%			2.489	0.289
Very satisfied	6(40.00)	3(20.00)		
satisfied	7(46.67)	5(33.34)		
same as	2(13.34)	5(46.68)		
discontent	0(0.00)	0(0.00)		

4. Discussion

4.1 Advantages of Multi-mode Teaching in Ophthalmology Teaching

The application of multi-mode teaching in ophthalmology

teaching has broken the shackles of the traditional single teaching mode and brought many significant advantages.

First of all, multi-mode teaching can improve students' interest in learning. Ophthalmology knowledge is complex and abstract, and a single teaching method is often difficult to arouse students' enthusiasm for learning. The multi-mode teaching combines case analysis, practical operation, simulation exercise and other ways, and makes the learning content more vivid and intuitive, so that it is easier to arouse the resonance and interest of students.

Secondly, multi-mode teaching helps to improve students' practical ability. Ophthalmology teaching is not only the teaching of theoretical knowledge, but also the cultivation of students' practical operation ability. Multi-mode teaching introduces clinical simulation, experimental operation and other practical links, allowing students to master skills in practice and improve their ability to solve practical problems [5].

In addition, multi-mode teaching also helps to cultivate students' innovative thinking. In the traditional teaching mode, students can only passively accept knowledge, while the multi-mode teaching encourages students to participate actively and think positively, and cultivate students' critical thinking and innovative ability through group discussion, case analysis and other ways.

4.2 The Deficiency of Multi-mode Teaching in Ophthalmology Teaching

Although multi-mode teaching has many advantages in ophthalmology teaching, there are also some shortcomings.

First of all, multi-mode teaching requires higher teachers. Teachers need to have solid professional knowledge, rich teaching experience and good organization and coordination ability in order to effectively implement multi-mode teaching. However, in reality, not all teachers have these conditions, which limits the promotion and application of multi-mode teaching to some extent.

Secondly, multimodal teaching needs sufficient teaching resources and facilities to support. For example, the practical operation, simulation practice and other links require the corresponding equipment and site support. However, in some relatively backward areas or schools, these resources may not meet the needs of multimodal teaching [6].

In addition, multi-modal teaching may also lead to some students are difficult to adapt. Due to the differences in students' learning habits and ability level, some students may feel confused or confused about the diversified teaching methods.

4.3 How to Further Optimize the Multi-mode Teaching Strategy

In view of the shortcomings of multimodal teaching in ophthalmology teaching, we can optimize it from the following aspects:

Strengthen teacher training and improve their teaching ability and quality. Through regular training, communication and learning activities, teachers can better master the concept and methods of multi-mode teaching and improve the teaching effect.

Reasonable allocation of teaching resources to ensure the smooth implementation of multi-mode teaching. According to the actual situation, schools should increase the investment in ophthalmology teaching resources, improve the teaching conditions, and provide a strong guarantee for multi-mode teaching.

Pay attention to the individual differences of students and teach students according to their aptitude. Teachers should flexibly adjust the teaching methods and contents according to the actual situation of students to ensure that every student can effectively learn and improve in the multi-mode teaching.

Strengthen the teaching evaluation and feedback, and constantly improve the multi-mode teaching strategies. Through the regular teaching evaluation and feedback mechanism, timely understand the students' learning situation and problems, and according to the actual situation to adjust and optimize the teaching strategy [7].

4.4 Prospect of the Future Development Trend of Ophthalmology Teaching

With the progress of science and technology and the continuous updating of educational concepts, ophthalmology teaching will present the following development trends in the future:

First, the teaching methods will be more diversified and personalized. In the future, ophthalmology teaching will pay more attention to students' individual differences and learning needs, and meet students' different learning needs by introducing more diversified teaching methods and means.

Secondly, the teaching content will pay more attention to practice and innovation. In the future, ophthalmology teaching will pay more attention to the cultivation of students' practical ability and innovative thinking, and improve students' comprehensive quality and competitiveness by strengthening practical operation, clinical simulation and other links.

Finally, the teaching resources will be more intelligent and shared. With the development and application of information technology, future ophthalmology teaching will make full use of intelligent teaching system, online education resources and other advanced technical means to realize intelligent management and sharing of teaching resources, and improve teaching efficiency and quality.

In conclusion, multimodal teaching has significant advantages but also shortcomings in the teaching of ophthalmology. We need to give full play to the advantages of multi-mode teaching and improve the quality and effect of ophthalmology teaching by constantly optimizing teaching strategies, strengthening teacher training and rationally allocating teaching resources. At the same time, we also need to pay

attention to the future development trend of ophthalmology teaching, actively adapt to and respond to challenges, and promote the continuous development of ophthalmology teaching career.

References

- [1] Han Bei, Ke Lili, Zhong Qiong. Discussion of case teaching-oriented situational teaching mode in ophthalmology teaching [J]. Health Industry in China, 2023, 20 (19): 192-194.
- [2] Song Yi, Liu Jiali, Wang Guimao. Application of PBL and Humanistic Quality Education in TCM Ophthalmology teaching [J]. Journal of Traditional Chinese Medicine Management, 2024, 32 (1): 158-160.
- [3] Liu Yujie, Ge Shanyong. Application of situational simulation combined case teaching in ophthalmology teaching [J]. Medical food therapy and Health, 2022 (003): 020.
- [4] Yang Chengcheng, Yang Xiuxia, Liu Pingping, et al. Exploration of the joint TBL teaching method in ophthalmology teaching through ward teaching [J]. Chinese Continuing Medical Education, 2024 (7).
- [5] Zhang Yibing, Zhang Bingjie, Wang Dan, et al. Application of problem-based learning in ophthalmology teaching [J]. Anhui Medicine, 2024 (6).
- [6] CAI Jie, Yang Yong, Hu Ming. The application of flipped classroom in seven-year clinical medicine students [J]. Chinese Contemporary Medicine, 2022, 29 (36): 168-172.
- [7] Chen Zhiqing, Shen Junhui, Zhang Li. The Application of the multi-dimensional teaching mode in the teaching practice of ophthalmology in the era of "Internet+" [J]. Continuing Medical Education in China, 2023, 15 (17): 29-32.