The Application of Case Discussion Method in Medical Genetics Teaching

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Abstract: Case discussion and case analysis were introduced into medical genetics teaching to improve medical students' ability of self-learning, clinical thinking, problem analysis and problem solving, and clinical practice skills. Guiding students to carry out genetic disease learning and scientific research based on clinical genetic cases. Based on the process of genetic disease analysis, the teaching process is developed step by step from family analysis, literature and database application, experimental scheme design and implementation, result analysis and summary. This method is used in the teaching of medical genetics. The majority of students agree that the case discussion method can stimulate students' interest in learning. Can teach the same, can not only improve the overall quality of teachers, but also improve students' memory ability, comprehensive ability to analyze and solve problems, but also develop students' self-learning, thinking and inductive ability, as well as their ability to express. It has cultivated students' comprehensive analysis ability of genetic diseases, trained students' research thinking and scientific research ability, and has promotion value in medical colleges.

1. Introduction

Medical genetics, as a compulsory course in medical colleges and universities, is a bridge subject combining basic medicine with clinical medicine. It mainly studies the relationship between human diseases and genetics, and directs clinical practice of diagnosis, treatment and prevention of genetic related diseases [1]. Combining case discussion with clinical practice and case analysis is a new way to cultivate medical students' self-learning ability and clinical practice ability. The teaching task of medical genetics is to enable students to master the pathogenesis, transmission mode, diagnosis, treatment and prognosis of hereditary diseases, at the same time, learn to estimate and prevent the recurrence risk of hereditary diseases, so as to control the recurrence of hereditary diseases [2]. Medical genetics is a frontier discipline in life sciences and medical sciences, and one of the subjects of the national qualification examination for practicing physicians. In recent years, with the establishment of the genetic information database in the bio-information era, and the clinical application of high-throughput sequencing, chip and other gene and genomic analysis technologies, the medical genetics curriculum is more extensive [3]. This teaching concept overcomes the shortcomings of students' lack of systematic and comprehensive knowledge, and can stimulate students' interest in learning.

Faced with rapid progress in genetics, how to improve the quality of teaching is an important topic for every professional teacher. In the long-term teaching practice of medical genetics, we have summed up a set of effective teaching methods, namely case analysis and discussion method. Due to the lack of genetic knowledge, it is impossible to establish a link between disease and genetics and misdiagnosis [4-5]. Missed diagnosis or the best period for patients to miss genetic counseling affects the clinician's professional ability and professional quality to a certain extent. Therefore, in the five-year undergraduate course, the second classroom teaching activity of medical genetics centered on students is carried out as an extension and supplement of the first classroom teaching, which further expands the teaching content and expands the students' clinical thinking and ability to analyze and solve problems [6]. The purpose of this study is to introduce clinical case analysis and social practice into teaching in time so that students can connect and penetrate knowledge horizontally and vertically, and integrate basic medical knowledge and clinical medical knowledge effectively [7]. In the process of teaching exploration, we have achieved good results through the

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method of research experiment teaching, which is conducive to the cultivation of scientific research thinking and scientific research ability [8].

2. Methodology

Case analysis and discussion teaching method is to guide students to connect clinical cases with the basic theory of genetics through heuristic teaching, and to improve students' ability to actively, comprehensively and comprehensively apply basic theory with the help of various discussion forms [9]. For classroom teaching of any subject, good introduction has the function of attracting attention, arousing curiosity, stimulating thinking and cultivating ability. Current experimental courses of medical genetics are limited by class hours and experimental conditions. Most colleges and universities only offer simple genetic counseling case analysis, which cannot meet the needs of modern experimental teaching of medical genetics [10]. That is to say, the teaching case is a typical case that reflects the actual situation of clinical or daily life, and is representative; at the same time, it is not necessary to bring a clip-on discussion, and the objective statement is clear; the problem that can be combined with the teaching content can inspire students to think and be consistent with the teaching goal. Case Analysis Discussion The specific implementation of the teaching method should aim at the theoretical knowledge of medical genetics that students have already learned, select typical cases, and provide complete clinical performance.

Students who choose undergraduate majors in clinical medicine discuss the teaching methods commonly used in medical genetics teaching, and analyze them according to the three levels of like, general and dislike. The statistical results are shown in Table 1 and Figure 1.

Table 1 Students choose the case method discussion method statistics

Level	Number of people	Proportion(%)
Like	24	67
General	18	55
Dislike	7	31

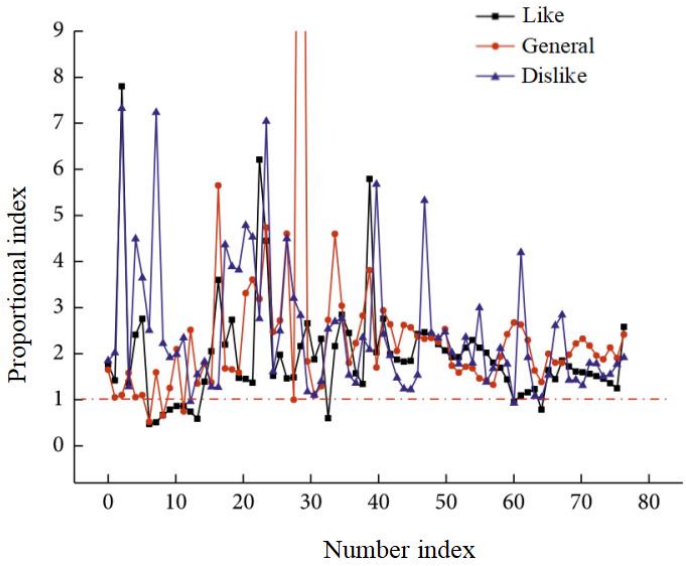

Fig.1. Students choose the case method discussion method statistics

In the process of medical genetics teaching, in addition to the introduction of medical records to inspire students to think, and then learn about theoretical knowledge, to verify the authenticity of the theory, teachers can also introduce cases after learning the basic theory. Update the school-level quality course; combine the clinical, scientific research, progress, experiment and other sub-sections to ask questions. When writing the textbook, there is a corresponding knowledge link in each chapter, and there are corresponding exercises in each chapter. Because the experiment contents are

designed in advance, students complete the experiment step by step, mainly the reappearance of classroom theoretical knowledge. It is difficult to cultivate students' innovative ability and scientific research thinking ability in the implementation process. Many case teaching practices have proved that teaching cases can be presented by modern multimedia. Multimedia technology has obvious advantages in the presentation of teaching cases. Therefore, in the face of practical clinical problems and practical needs, targeted research experiments on genetic diseases can cultivate students' ability of genetic disease analysis and scientific research, which is conducive to reserving future medical genetics professionals.

In teaching, many teachers pay attention to carefully designing the introduction of curriculum, but ignore the end of classroom teaching, which affects the overall teaching effect. Students consult and analyze other course materials and network resources. Finally, they discuss and summarize in groups. Representatives are selected to answer key questions and knowledge points in case analysis cases when teachers are in class. Case analysis teaching method is mainly realized through case discussion. After learning the basic theory, the teacher chooses cases for case discussion according to the teaching content. Before case discussion, every student is required to prepare for reviewing textbooks for cases and problems after class. The teacher simply summarizes and evaluates the viewpoints put forward by the students; then, the teachers express their own opinions and opinions, let the students identify their strengths and weaknesses in the case analysis, and correct the incorrect understanding. But in the actual application process, teachers will flexibly change some programs according to the characteristics of their respective courses. Research-based experimental teaching is an exploratory learning method that allows students to learn in experiments, experiment in learning, and stimulate students' interest in independent learning, which can cultivate students' comprehensive ability.

3. Result Analysis and Discussion

The teacher simply summarizes and evaluates the viewpoints put forward by the students; then, the teachers express their own opinions and opinions, let the students identify their strengths and weaknesses in the case analysis, and correct the incorrect understanding. But in the actual application process, teachers will flexibly change some programs according to the characteristics of their respective courses. Research-based experimental teaching is an exploratory learning method that allows students to learn in experiments, experiment in learning, and stimulate students' interest in independent learning, which can cultivate students' comprehensive ability. Teachers use the big lesson to explain the basic knowledge, basic skills and clinical application system of medical genetics in a limited time, and solve the controversial problems. Many genetic diseases may be encountered for the first time for most physicians, and some genetic diseases may be the first in the world. The current teaching model of medical genetics lacks the study of genetic disease analysis methods and research methods. Teachers guide students to use medical genetics knowledge to analyze and think about the above problems, and further summarize the differences between these diseases and common clinical diseases, and develop ideas and precautions for diagnosing diseases. Teachers give necessary guidance and select group representatives to speak. After the group representatives have spoken, the students are allowed to speak freely, express their different opinions and elaborate their views. Change the way other students watch to the way of rushing to answer, let the members of each group help the selected students solve the problem together. The discussion atmosphere is quite warm, which can better reflect their teamwork and invisibly promote students' active learning.

In the questionnaire survey, more than 85% of the students of different majors and levels thought that the enlightening teaching based on medical records was beneficial to integrating theory with practice, enhancing the ability of clinical practice, analyzing and solving problems, shortening the period of adapting to clinical work and training practical talents. See Figure 2 below.

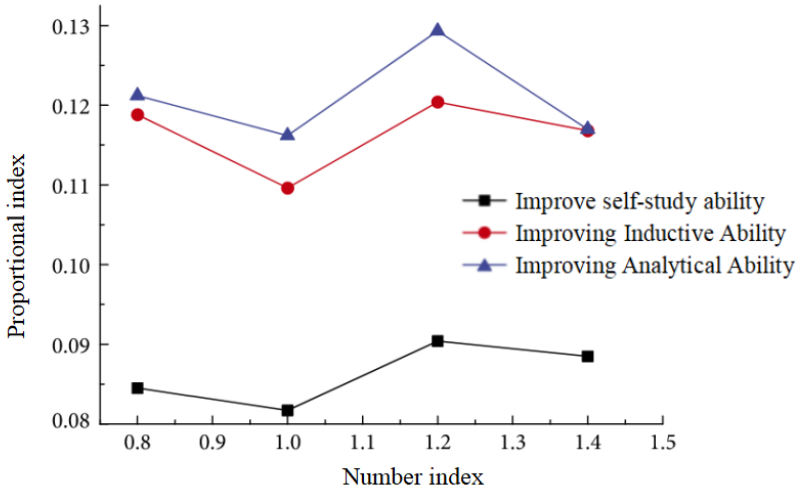

Fig.2. The proportion of teaching effect of case discussion method that students choose to approve

The case discussion method has changed the traditional way of classroom teaching, from indoctrination to heuristic, from one-way indoctrination to two-way communication, from teacher-centered to student-centered, and from passive learning to active learning. Only with solid clinical genetic work experience and scientific research ability can we better guide students and promote teachers' own progress. In addition, the teaching process has trained young teachers and students to communicate and guide ability. In class, the students are divided into groups to discuss and the teachers give necessary guidance. Then the representatives of each group are selected to speak on the platform. Finally, the teachers summarize their opinions and focus on explaining, summarizing and comparing the Medical Genetics Problems of genetic diseases in diagnosis, prevention and common diseases. In the process of teacher-student interaction and interaction, students' teamwork spirit, logical thinking ability, verbal ability and ability to find and solve problems are cultivated. The results of the discussion class are part of the formative assessment. Students are very concerned about the results and use extra points for students with outstanding performance. The other students' scores are consistent in a way that stimulates the spirit of mutual humiliation and common progress.

The basic theories, basic concepts, and basic knowledge of medical genetics are relatively complete. Students can choose prevention and control strategies based on their own knowledge, and they can fully exert their enthusiasm. Case analysis and discussion The teaching method emphasizes the active learning of students. In the process of medical genetics case analysis teaching, students are required to carry out the study of the texts and find relevant materials with the questions arranged by the teachers, read a large amount of literature, enrich the content learned in the classroom, speak actively when reporting, and actively correct and promote when deviation occurs. Communication and communication between teachers and students, students and students. Therefore, in order to carry out case teaching thoroughly, extensively and effectively, we need to build a teaching team with high professional quality, enthusiasm and good at case teaching. By studying the relevant genetic disease data and literature, students can gradually have a deeper understanding of its clinical characteristics, genetic characteristics, pathogenesis, diagnosis and differential diagnosis, gene diagnosis, and so on, and then put forward a preliminary research program. To cultivate students' ability to think, analyze and solve problems, as well as innovative thinking, independent work of clinical practice skills and scientific research ability.

4. Conclusions

Case discussion teaching method is applicable to the introduction of medical genetics course, examples in class, the end of class, homework after class, stage review and final examination for undergraduates majoring in clinical, prevention and laboratory, but not to the end-of-class

examination for undergraduates majoring in clinical and nursing. The teaching method of case analysis and discussion requires teachers to prepare carefully, study assiduously and grasp the various knowledge involved in cases. Through this teaching method, teachers' knowledge can be broadened and their comprehensive teaching ability can be improved. The cases designed by teachers are clinical common genetic diseases and multiple genetic diseases, which have a great impetus to improve the medical practice and professional quality of medical students, and achieve good teaching results. Through the network, it is easier to obtain database information, avoiding the limitations of traditional experimental teaching and the limitations of laboratory conditions, and can face more students with sufficient resources to facilitate implementation in various medical colleges. These tasks require long-term and unremitting efforts in the future, so that the organizational case teaching method is perfected day by day, so that students can really benefit.

References

[1] Yadav A, Vinh M, Shaver G M, et al. Case-based instruction: Improving students' conceptual understanding through cases in a mechanical engineering course [J]. Journal of Research in Science Teaching, 2014, 51(5):659-677.

[2] Campbell M G, Powers T M, Zheng S L. Teaching with the Case Study Method To Promote ActiveLearning in a Small Molecule Crystallography Course for ChemistryStudents[J]. Journal of Chemical Education, 2016, 93(2):270-274.

[3] Alfieri P, Caciolo C, Piccini G, et al. Behavioral phenotype in Costello syndrome with atypical mutation: A case report [J]. American Journal of Medical Genetics Part B: Neuropsychiatric Genetics, 2015, 168(1):66-71.

[4] Beamer L C. Ethics and Genetics: Examining a Crossroads in Nursing Through a Case Study [J]. Clinical journal of oncology nursing, 2017, 21(6):730-737.

[5] Shur N, Carey J C. Genetic differentials of child abuse: Is your case rare or real? [J]. American Journal of Medical Genetics Part C: Seminars in Medical Genetics, 2015, 169(4):281-288.

[6] Van d T L, Smid B E, Poorthuis B J H M, et al. A systematic review on screening for Fabry disease: prevalence of individuals with genetic variants of unknown significance. [J]. Journal of Medical Genetics, 2014, 51(1):1-9.

[7] Kahn J P, Mastroianni A C. Creating a Stem Cell Donor: A Case Study in Reproductive Genetics [J]. Kennedy Institute of Ethics journal, 2004, 14(1):81-96.

[8] Kerasidou, Angeliki. Sharing the Knowledge: Sharing Aggregate Genomic Findings with Research Participants in Developing Countries [J]. Developing World Bioethics, 2015, 15(3):267-274.

[9] Sim U H, Ting S H. Patterns and Determinants of Attitudes towards Genetic Risk of Cancer: Case Study in a Malaysian Public University [J]. BioMed Research International, 2018, 2018(1):1-7.

[10] Leong A, Wheeler E. Genetics of HbA1c: a case study in clinical translation [J]. Current Opinion in Genetics & Development, 2018, 50:79-85.