

Application of PBL combining CBL in otorhinolaryngological teaching.

Jiang Chengyi*, Qiang Hualong, Jiang Tao, Xu Yajia, Cheng Zhongqiang

The First Affiliated Hospital of Bengbu Medical College, Bengbu 233004, Anhui, PR China

Abstract

Objective: To observe the application of PBL combining CBL in otorhinolaryngological teaching.

Methods: 100 cases of students were selected and randomly divided into control group and observation group, with 50 cases in each group. The control group was given traditional teaching method, while the observation group was given PBL combining CBL teaching method. The learning effect, students' satisfaction, and teacher assessment condition of both groups were compared.

Results: The results of the observation group were: clinic pathologic analysis 96.35 ± 1.02 grades, theory 97.32 ± 1.32 grades, clinical practice 96.98 ± 1.58 grades, and paper 95.87 ± 1.33 grades, which were statistically and significantly different with the control group, with $P < 0.05$. The students satisfaction and teacher assessment of the observation group were respectively 98.00% and 96.00%, which were significantly better than the control group, with $P < 0.05$.

Conclusion: Our findings suggest that the combination of PBL and CBL is more effective in improving students' academic performance and satisfaction than traditional teaching methods.

Keywords: PBL, CBL, Otorhinolaryngologic, Teaching.

Accepted on October 23, 2017

Introduction

Otorhinolaryngology is a common clinical department. As a secondary discipline, otorhinolaryngologic is a required course of the medical major students. However, the teaching material of otorhinolaryngologic is complicated and related with anatomy. In this case, it is hard to learn it well only from the books, which makes the teaching method particularly important [1]. Case based learning (CBL) was pioneered by Randall, a professor at the Harvard University School of law in 1870s. It is a typical case in the process of teaching teachers through the selection of specific, lead the students to analyze and discuss, in order to make students understand and master the theoretical knowledge and operation points, to cultivate students' ability of thinking and problem solving [2]. Problem based learning (PBL) is a kind of teaching mode of Professor Barrow in 1969 the first in Canada Mike McMaster University School of medicine, is still widely used in the teaching of all subjects. The teaching model is setting problems in the context, through the cooperation of learners to solve problems in the real situation, so as to learn the knowledge hidden behind the problem, and cultivate the ability to solve problems and autonomous learning [3]. PBL and CBL are common teaching methods in clinical practice. But it is proved that the separate use of PBL and CBL leads to poor teaching result. Based on some researches, the combination of PBL and CBL can effectively improve student performance and satisfaction. Guiding students to understand laryngeal cancer from anatomical and pathological features. This is the important connotation of PBL teaching method [4]. In this way, it is

widely used in clinical teaching [5]. This paper studied students of otorhinolaryngologic from 2016 to 2017 to choose a proper teaching method.

Document and Methods

Document

100 cases of students in the otorhinolaryngologic department of a medical college from January 20, 2016 to January 20, 2017 were selected and randomly divided into control group and observation group, with 50 cases in each group. All of them were in the clinical department. This research was approved by the Ethical Committee of the First Affiliated Hospital of Bengbu Medical College according to the declaration of Helsinki promulgated in 1964 as amended in 1996, the approval number is 2017002.

Observation group: There were 18 cases of male and 32 cases of female; the age ranges from 19 to 23 years old, with the average age of 21.23 ± 1.02 years old.

Control group: There were 19 cases of male and 31 cases of female; the age ranges from 20 to 23 years old, with the average age of 21.55 ± 1.64 years old.

Various data of both groups were compared and showed no statistically significant difference, with $P > 0.05$.

Methods

Control group: Students in the control group were given traditional teaching method.

Observation group: Students in the observation group were given the combination of PBL and CBL. Based on the PBL teaching method, teachers learnt the teaching content and designed questions based on the teaching program. Students were asked to search for related document, model, specimen, and other teaching tools. Besides, group discussion was adopted to improve students' abilities to analyze, solve problems, and search documents. After discussion, the final result would be submitted to the teacher for rectification and supplementation [6]. CBL teaching method was adopted during the explanation process, in which, the teacher made examples of many typical clinical cases and uses multiple methods including multimedia, figures, videos, and models. In this way, the typical clinical cases were combined with the theory to enhance students' subjective initiative, promote teaching effect, and improve students' performance.

Observation indicators

The learning result (including pathologic analysis score, theory score, clinical practice score, and paper score) of both groups

Table 1. Comparison of learning effect of both groups (grade).

Group	No. of cases	Pathologic Analysis	Theory	Clinical Practice	Paper
Observation group	50	96.35 ± 1.02	97.32 ± 1.32	96.98 ± 1.58	95.87 ± 1.33
Control group	50	78.96 ± 1.33	79.65 ± 1.74	80.20 ± 1.34	79.82 ± 1.33

Note: The observation group and the control group were compared, with $P < 0.05$.

Comparison of students' satisfaction and teacher assessment of both groups

The students' satisfaction and teacher assessment of the observation group were 98.00% and 96.00%, which were significantly higher than the control group (respectively 70.00% and 72.00%), with $P < 0.05$ (Table 2).

Table 2. Comparison of students' satisfaction and teacher assessment of both groups (%).

Group	No. of cases	Students' Satisfaction	Teacher Assessment
Observation group	50	49 (98.00%)	48 (96.00%)
Control group	50	35 (70.00%)	36 (72.00%)

Note: The observation group and the control group were compared, with $P < 0.05$.

Discussion

As one of the most important clinical department, otorhinolaryngology is regarded to a single discipline because

were observed. The score ranged from 0 to 100, the higher, the better. The students' satisfaction and teacher assessment of both groups were observed.

Statistical treatment

The learning effect of both groups was expressed by mean ± standard deviation. T test was adopted. % was used to express the students' satisfaction and teacher assessment. Chi-square value and SPSS20.0 were used when there were significant differences in various data between both groups $P < 0.05$.

Results

Comparison of learning effect of both groups

The results of the observation group were: clinic pathologic analysis 96.35 ± 1.02 grades, theory 97.32 ± 1.32 grades, clinical practice 96.98 ± 1.58 grades, and paper 95.87 ± 1.33 grades, which were statistically and significantly different with the control group (respectively 78.96 ± 1.33 grades, 79.65 ± 1.74 grades, 80.20 ± 1.34 grades, and 79.82 ± 1.33 grades), with $P < 0.05$ (Table 1).

the ear, nose, and throat are connected and interacted to each other [7]. At present, with the higher and higher requirement to medical treatment, the students of the said major are also increasing accordingly. Among the various teaching methods in clinical practice, the traditional teaching method is normally seen. However, the traditional teaching method is a cramming method of teaching, which will lead to the lack of abilities of analyzing and solving problem. In this case, a new teaching method is of great importance to improve students' performance and teaching quality [8].

Literature suggests that PBL in medical school positively affects physician competencies essential to the care of older adults, including appreciation of social and ethical aspects of health care, communication skills, and lifelong learning [9]. Beyond building a basic fund of knowledge PBL also helps develop interpersonal and communication skills as group members work through a problem and teach one another about areas they studied independently [10]. Some of the results are consistent with ours [11,12], They also believe that the combination of PBL and CBL was better than traditional education. In this research, the combination of PBL and CBL received a satisfying teaching result, with effectively

improving students' satisfaction and performance [13]. With PBL teaching method, commonly seen clinical diseases are used as clues for students to discuss and search for related document. This is also the focus of learning, which can integrate multiple disciplines and combine medical knowledge with practice. In this way, the traditional discipline boundary is broken. Students can learn more knowledge in limited time duration and improve their abilities to explore and solve problems [14]. By combining learning tasks with clinical problems, students are able to explore and solve problems initiatively. In this way, their activity and initiative are fully inspired, which is of great importance to improve their comprehensive quality. Through the combination of speech and the new teaching method, students can fully grasp the related knowledge of otorhinolaryngology and obtain the basic knowledge structure for further utilization in clinical practice. In the speech process, CBL teaching method is also adopted to apply typical cases in the teaching, thus to enhance students' initiative and guide self-thinking. After that, students are able to organize and conclude their learning results. The full utilization of both teaching methods makes it easier for students to manage the related knowledge. The case study helps students to deeply understand the related knowledge in clinical practice, while thinking and analysis helps students to improve their abilities to analyze and solve problems. In this way, the comprehensive quality of students can be improved, as well as the ability to solve problems in clinical working.

The results of the observation group were: clinic pathologic analysis 96.35 ± 1.02 grades, theory 97.32 ± 1.32 grades, clinical practice 96.98 ± 1.58 grades, and paper 95.87 ± 1.33 grades, which were statistically and significantly different with the control group (respectively 78.96 ± 1.33 grades, 79.65 ± 1.74 grades, 80.20 ± 1.34 grades, and 79.82 ± 1.33 grades), with $P < 0.05$. The students' satisfaction and teacher assessment of the observation group were 98.00% and 96.00%, which were significantly higher than the control group (respectively 70.00% and 72.00%), with $P < 0.05$. Above all, the combination of PBL and CBL shows significant learning effect on the otorhinolaryngologic teaching, with high satisfaction, which is worth further research. There are several limitations. Firstly, the sample size of this study is not large enough, and the sample size will be expanded in future research. Secondly, this study only focuses on otorhinolaryngology.

References

1. Zhonghua L. Application research of PBL teaching method with CBL teaching method in the otorhinolaryngology teaching. *Modern Prevent Med* 2016; 38: 4174-4175.
2. Stark R, Kopp V, Fischer M R. Case-based learning with worked examples in complex domains: Two experimental studies in undergraduate medical education. *Learning Instruction* 2011; 21: 22-33.
3. Lalonde F. Problem-based learning in osteopathic education. *Int J Osteopath Med* 2013; 16: 216-219.
4. Gunn H, Hunter H, Haas B. Problem based learning in physiotherapy education: a practice perspective. *Physiother* 2012; 98: 330-335.
5. Jianqi Z, Wei C, Yi L. Application of integration of PBL with CBL teaching method in ophthalmology nursing teaching. *Int J Ophthalmol* 2015; 10: 1736-1738.
6. Canjun L, Haitao W, Weishuang S. Application of integration of TBL, CBL, and PBL teaching method in cardiology clinical practice. *J Qiqihar Univer Med* 2014; 35: 3211-3212.
7. Danfeng L, Fuquan C, Li S. Application of stepped multi-model merged methodology in ENT clinical teaching for undergraduates. *J Otolaryngol Ophthalmol Shandong Univer* 2015; 10: 77-79.
8. Qiubei Z, Shuwei Z, Jian W. Application of PBL and CBL under the platform of network information in the probation of otolaryngology medicine. *Shanghai Med Pharm J* 2013, 7: 42-44.
9. Koh GCH, Khoo HE, Wong ML, Koh D. The effects of problem-based learning during medical school on physician competency: a systematic review. *Canadian Med Assoc J* 2008; 178: 34-41.
10. Heru AM. Teaching psychosomatic medicine using problem-based learning and role-playing. *Acad Psychiatry* 2011; 35: 245-248.
11. Zhonghua L. Application of PBL teaching method combined with CBL teaching method in department of ENT teaching. *Modern Prevent Med* 2011; 38: 4174-4175.
12. Zhendong DJ, Xueyuan Z, Cheng Z. CBL combined with PBL teaching method in otolaryngology eight year probation application. *Basic Med Edu* 2014; 16: 645-647.
13. Baojun W, Zhenghui W, Junbo T. Application of problem-based learning combined with plastic cases in teaching of otolaryngology-head and neck surgery. *Chinese J Aesthetic Med* 2015; 44: 76-78.
14. Guangwang W, Nianli X, Du X. Biogenetically related caged ent-four new diterpenoids from *Isodon eriocalyx* var. *laxiflora*. *Tetrahedron letters* 2015; 53: 2777-2781.

*Correspondence to

Jiang Chengyi

The First Affiliated Hospital

Bengbu Medical College

PR China