

# Application of Scenario Simulation Combined Case Teaching Method in the Improvement of Doctor-Patient Communication Ability of Orthodontic Graduate Students

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**Abstract:** *Objective:* To investigate the application on scenario simulation combined case teaching method of the doctor-patient communication skills in orthodontic graduate students. *Methods:* The orthodontic graduate students were trained with doctor-patient communication skills. All residents were randomly divided into control group (N=20) and the experimental group (N=20). The control group used the traditional lecture-style teaching methods. The experimental group used scenario simulation teaching combined case teaching method. To apply the Chinese Version of Liverpool Communication Skills Assessment Scale (LCSAS) to evaluate the communication skills of residents, compare the differences between the two groups in front of their own training and post-training, as well as the differences in the two groups after training. Assessing the degree of satisfaction of patients and compare the results; and to investigate the extent of recognition of residency scenario simulation teaching and case teaching method in teaching doctor-patient communication skills training in residency applications. *Results:* Comparing of experimental group and control group scores after the different training methods, experimental group scored significantly higher than control group ( $27.26 \pm 3.75$  vs  $12.81 \pm 5.18$ ), and the difference was statistically significant ( $P < 0.01$ ). Patient satisfaction survey results showed that, in terms of the clear and complete condition explained by the doctor, the difference between the two groups was not statistically significant ( $P > 0.05$ ); in the language of physicians kind, showing compassion, the patient can be respected and integrated communication capabilities, the experimental group was significantly higher than control group scores, and the difference was statistically significant ( $P < 0.05$ ); Survey showed that 100% of the residents acknowledged the scenario simulation combined case teaching method, and which can improved doctor-patient communication skills. 95% of orthodontic graduate students believed that this teaching method can deepen the mastery of theoretical knowledge and improve the learning ability and thinking ability. *Conclusions:* Scenario simulation combined case teaching method could improve the doctor-patient communication skills of orthodontic graduate students, and also reduce the risk of medical disputes.

**Keywords:** Orthodontic, Graduate Students, Doctor-Patients Communication, Scenario Simulation Teaching, Case Teaching

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## 1. Introduction

The training of doctor-patient communication ability is

one of the core contents of graduate teaching, is the basic skill that every graduate student must master, and is an indispensable key element to alleviate the contradiction between doctors and patients and build a harmonious

doctor-patient relationship [1, 2]. As a subject with strong theoretical and practical stomatology, how to train a competent dentist for clinical work and improve his doctor-patient communication ability is particularly important [3, 4]. Nowadays, medical education has found that good doctor-patient communication ability is one of the necessary professional qualities for medical students, and it is the bridge and link between medical students from professional theory to clinical practice [5]. Meanwhile, There is evidence that training in doctor-patient communication skills for medical students can improve their doctor-patient communication skills [6]. Therefore, in order to improve the doctor-patient communication ability of graduate students, the School of Stomatology of Hebei Medical University is constantly exploring and reforming the teaching methods. In combination with the characteristics of this major, the orthodontic teaching and research section applies the scenario simulation combined case teaching method to the teaching of graduate students, which has achieved good results, and hopes to provide reference and basis for the orthodontic teaching and research section to develop a standardized teaching mode.

## 2. Materials and Methods

### 2.1. Normal Information

A total of 40 orthodontic graduate students of School and Hospital of stomatology, Hebei Medical University were selected, including 8 males and 32 females. It was randomly divided into traditional lecture-style teaching group (control group) and added scenario simulation combined case teaching group (experimental group), with 20 members from each group. There was no significant difference between the two groups in gender, age and test scores of all basic subjects.

### 2.2. Methods

#### 2.2.1. Typical Case Preparation

Both groups of teaching used the same batch of typical cases. The team is composed of experienced teachers. After repeated discussion and selection, five typical orthodontic case scripts with representative, typical and professional characteristics, with different levels of disposal difficulty and requiring certain communication skills were formulated finally. The script amplified the background of the event, the identity, the location scene, the atmosphere, the specific language tone and other factors.

The main contents of the case include: 1) A 20-year-old adult female patient has signed a consent form for orthodontic orthognathic combination treatment, but she requires to change the treatment plan to non-surgical camouflaged orthodontic treatment before formal treatment. 2) An adolescent patient has tried out non-tooth extraction correction for one year, and now the anterior teeth are labial and the face is protruding. It is necessary to explain changing the orthodontic plan with tooth extraction. 3) The patient was

very anxious because one band fell off and was swallowed accidentally. It need to communicate with the family members immediately. 4) The patient has syncopal after anesthesia during the anchored implant surgery. The doctor should explain the condition and treatment plan to the family members. 5) The patient has basically completed the treatment in this stage, The doctor should explain the treatment results and give relevant advice.

#### 2.2.2. Control Group

The control group adopted traditional teaching methods. The lectures were held by chief physicians with rich clinical experience and humanities teaching experience. Focus on doctor-patient communication skills, typical orthodontic case disposal sharing and communication case analysis, and cover medical psychology, medical ethics, medical dispute analysis, social relations and other content.

#### 2.2.3. Experimental Group

After the traditional teaching, the experimental group added the training of scenario simulation combined case teaching method. 1) Preparation stage: the teacher wrote 5 representative typical cases according to the requirements of the syllabus. The graduate students in the experimental group were divided into groups of four students, and a typical orthodontic case was selected from each group. They playde as patients, family members and two doctors respectively. The teacher will give necessary guidance and communication with the patient and the family members 2 days in advance. In these two days, the graduate students can analyze and discuss according to the case provided by the teacher, consult materials, simulate exercises and other preparations. 2) Simulation stage: first, the teacher read out the background information, then the patient and the doctor appeared (can simulate the emotional actions of the patient and his family), the relevant examination data can be displayed on the slide, and the doctor can fully communicate with the patients and their families. 3) Comment stage: The teacher made targeted explanations and comments, to teach students the communication methods with patients and their families and clinical thinking methods, so as to apply theoretical knowledge to practice, and cultivate students' ability to find and solve problems.

### 2.3. Assessment Method

The Liverpool Physician Communication Assessment Scale (LCSAS) was used. Specific assessment methods: (1) All orthodontic graduate students undergo LCSAS before and after the training; (2) All orthodontic graduate students were required to inform the case during the assessment. Then the differences between the two groups before and after the training according LCSAS were compared; (3) The satisfaction of patients (standardized patients) with all orthodontic graduate students after the training were investigated. The results evaluation were satisfactory and unsatisfactory. The satisfaction results in the 2 groups were compared. (4) Questionnaires were distributed to investigate

the recognition degree of orthodontic graduate students' doctor-patient communication ability training on the method of combining situational simulation teaching and case teaching. Finally, the assessment results and the collected questionnaires were counted and analyzed.

#### 2.4. Statistical Method

Using SPSS 21.0 to perform statistical analysis on the data. Measurement data are expressed as ( $\bar{x} \pm S$ ). Paired t-test was used for pre-and post-training comparisons in the same group. Independent samples t-test was used for comparison between two groups. The results of the patient satisfaction survey were tested by the  $\chi^2$  test,  $P < 0.05$  was considered to be statistically significant.

### 3. Results

#### 3.1. The Evaluated Results of the Two Groups of Orthodontic Graduate Students

Both groups had low scores of  $9.26 \pm 3.02$  and  $9.31 \pm 3.25$  before the training, there was no significant difference between the two groups ( $P = 0.9$ ). In the control group, the LCSAS scale score was  $12.81 \pm 5.18$ , which improved from the pre-training score and was statistically significant ( $P < 0.05$ ). After training the doctor-patient communication skills, the LCSAS scale was  $27.26 \pm 3.75$ , which was

significantly higher than the score before training, and the difference was statistically significant ( $P < 0.01$ ). Moreover, after comparing the scores of the experimental groups and the control group after using different training methods, the experimental group score was significantly higher than the control group ( $27.26 \pm 3.75$  vs  $12.81 \pm 5.18$ ), and the difference was statistically significant ( $P < 0.01$ ) (Table 1).

**Table 1.** Comparison of orthodontic postgraduate assessment scores of the two groups using LCSAS scale (Score).

Group	Before the training	After the training	P
Control group (n=20)	9.26±3.02	12.81±5.18	<0.05
Experimental group (n=20)	9.31±3.25	27.26±3.75	<0.01
P	0.9	<0.01	

#### 3.2. Results of the Patient Satisfaction Survey

A patient satisfaction survey was conducted on standardized patients to compare their satisfaction with the two groups of orthodontic graduate students after training. The results showed that the satisfaction of patients in the experimental group was significantly higher, the ability to show compassion, the patients were respected, the condition and the comprehensive communication skills, and the difference was statistically significant ( $P < 0.05$ ); The results were similar in both groups with no difference in the doctor to explain a clear and complete condition (Table 2).

**Table 2.** Comparison of patient satisfaction survey [Number (%)].

Items	Control group	Experimental group	P
Doctors were kind	16 (80.0)	19 (95.0)	0.029
Doctors can show compassion	14 (70.0)	19 (95.0)	0.001
Patients can be respected	15 (75.0)	18 (90.0)	0.013
Clear and complete explanations	19 (95.0)	19 (95.0)	1.000
Comprehensive communication skills	15 (75.0)	18 (90.0)	0.025

#### 3.3. Questionnaire Survey Results

A questionnaire survey was conducted on the orthodontic graduate students in the experimental group, and 100% of the orthodontic graduate students recognized the teaching method of doctor-patient communication ability training by scenario simulation combined case teaching method, and believed that they could improve their doctor-patient communication skills and ability, increase their interest in learning and improve their ability to deal with emergencies. 95% orthodontic graduate students believed that this teaching method can deepen the mastery of theoretical knowledge, improve the learning ability and thinking ability (Table 3).

**Table 3.** Evaluation of doctor-patient communication ability in scenario simulation combined case teaching [Number (%)].

Questionnaire items	Agreement	Disagreement
Recognize teaching methods	20 (100.0)	0 (0)
Deepen the mastery of theoretical knowledge	19 (95.0)	1 (5.0)
Improve doctor-patient communication skills	20 (100.0)	0 (0)

Questionnaire items	Agreement	Disagreement
Improve learning ability	19 (95.0)	1 (5.0)
Improve thinking ability	19 (95.0)	1 (5.0)
Increase interest in learning	20 (100.0)	0 (0)
Improve the ability to deal with emergencies	20 (100.0)	0 (0)

### 4. Discussion

#### 4.1. Good Doctor-Patient Communication Can Establish a Good New Medical Order

Good doctor-patient communication can effectively reduce and avoid the doctor-patient conflict [7]. In particular, orthodontics has characteristics that are different from other departments. For example, the average age of patients is small, the majority of children and adolescents, long treatment courses, many times of return visits, difficult appointment time, complex clinical operation, strong professional related medical orders, flexible treatment plan and so on [8]. The undergraduate medical education of orthodontics often focuses on the teaching of theoretical courses, and the postgraduate education will gradually

transition from theoretical study to clinical study. Therefore, it is particularly important to develop effective training methods that can improve the doctor-patient communication ability of orthodontic graduate students. The scenario simulation teaching method is highly targeted, simulated and reproducible, and it is proved to be a feasible and effective doctor-patient communication practice training method [9, 10]. Scenario simulation combined case teaching method can enable orthodontic graduate students to learn and train their communication skills in scenes close to the actual clinical situation, so as to improve their doctor-patient communication ability and be better competent for clinical work.

#### **4.2. Application of Scenario Simulation Combined Case Teaching Method in Doctor-Patient Communication Training**

Before the training, we applied the LCSAS scale for evaluation. The two groups had similar scores and low scores. The main problems focused on poor sensitivity of patients' feelings, lack of open questions, lack of eye communication with patients, and unconfirming whether the patients and their families had understood the content of the conversation. In the control group, the score improved ( $12.81 \pm 5.18$  vs  $9.26 \pm 3.02$ ,  $P < 0.05$ ), but there were deficiencies in understanding patients' feelings and communicating with patients. After the scenario simulation combined case teaching method training, we found that the LCSAS score of the experimental group was significantly higher than that of the control group ( $27.26 \pm 3.75$  vs  $12.81 \pm 5.18$ ,  $P < 0.01$ ). Their communication skills have been greatly improved. They can cope with the consultation and notification of patients and their families, and pay more attention to the feelings of patients and their families, increase humanistic care, and improve the sensitivity of doctor-patient communication, which can comprehensively improve the level of doctor-patient communication and achieve the purpose of training.

In order to fully understand the training effect, we increased the training effect from the patient's perspective and designed the patient satisfaction assessment. The results of the patient satisfaction survey showed that the satisfaction of patients in the experimental group was significantly higher than that of the control group in terms of amiable language, compassion, respect for patients, explaining their condition and comprehensive communication ability. In the process of training, attention is paid to the training of tone and intonation, body language, eye contact and other aspects, and emphasizes that graduate students should pay attention to the doctor-patient relationship in communication, fully express sympathy, fully express respect for patients. The cultivation of these abilities can help doctors to get the recognition and trust of patients, so as to better accept the advice of doctors and achieve the purpose of communication.

In this study, it was found that the experimental group generally showed a strong interest in learning and could actively participate in the whole process of training. Not only

plays the doctor actively, and the patient and his family seriously, put about the condition, guidance treatment; the doctor who plays the patient and the patient's family also showed a high enthusiasm, take the initiative to ask various questions for consultation. The instructing teacher plays an important role in participating in the whole teaching and training process. Especially in the scenario simulation teaching, teachers are required to design some emergencies according to the different performance of each group, so as to improve students' ability of active thinking and adapting to changes. Through the questionnaire survey, the results show that 100% of orthodontic graduate students recognized the teaching method of doctor-patient communication ability training by scenario simulation combined case teaching method, and believed that it can improve doctor-patient communication skills and ability, increase their interest in learning and improve the ability to deal with emergencies.

#### **4.3. The Case Teaching and Scenario Simulation Teaching Method Are Proved Effective in Various Teaching and Training Processes**

The case teaching method and scenario simulation teaching method applied in the training are relatively novel and proved effective in various teaching and training processes [11, 12]. Case teaching method refers to a teaching method in which teachers select representative cases according to the needs of teaching objectives and teaching content, and guide students to find problems, think about problems, solve problems and other comprehensive abilities [13, 14]. The doctor-patient communication training cases in this study were all from the real clinical cases of our hospital, and the typical and representative cases were selected. Combined with the characteristics of orthodontic chair side operation and high patient participation, it needs to be processed and processed, so that it can more adapt to the needs of training. Different cases are graded for difficulty and displayed one by one for the training of doctor-patient communication, so that orthodontic graduate students are exposed to various clinical situations and conduct comprehensive training of communication skills, which is helpful to improve the training effect. According to the teaching content, through the design of real life similar scenes, characters and events, let the students play various roles, and then conduct simulation exercises, in order to better understand and master the knowledge and improve their practical ability [15].

In the doctor-patient communication training, the case teaching is taken as the main line, and based on the scenario simulation teaching, the case is displayed in the situation of simulating the real clinical situation. This greatly improves the participation of orthodontic graduate students, fully stimulates the enthusiasm of learning, and greatly promotes the cultivation of the independent practice ability and innovation ability of orthodontic graduate students. It is mainly reflected in the following aspects: (1) Scenario simulation teaching combined with case teaching rules pay more attention to students' ability to "learn", so as to fully

improve the independent thinking ability of orthodontic graduate students and exercise their clinical thinking ability. (2) By simulating the real clinical scenes of orthodontic patients, designing typical orthodontic cases, physician role playing and other forms, orthodontic graduate students can fully participate in the learning process, mobilize their enthusiasm, and increase the training effect. (3) Scenario simulation teaching can also provide a relatively safe environment for orthodontic graduate students, which can be practiced repeatedly, without worrying about being punished when making mistakes or causing harm to the patients, and the patients do not have to worry about paying the cost of health or life for the students' mistakes.

## 5. Conclusion

The doctor-patient communication ability of orthodontic graduate students trained by situational simulation combined case teaching method was significantly improved compared with that before the training, and their teaching effect was significantly better than the traditional classroom teaching. The orthodontic graduate students recognized this teaching method than the traditional teaching method. These fully show that the scenario simulation combined case teaching method is novel and practical, which can mobilize learning interest, effectively improve the clinical thinking ability and professional confidence of medical students, significantly enhance the strain ability and doctor-patient communication ability, and lay a solid foundation for growing into an excellent doctor with high professional competence.

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## Conflicts of Interest

The authors declare no conflicts of interest.

## References

- [1] Lei Xiaohua, Chen Guodong. Exploration on improving doctor-patient communication of medical students in the context of healthy China [J]. *China Medical Herald*, 2022, 19 (6): 187-189.
- [2] Duan Weina, Zeng Cheng, Liu Huimin, et al. Analysis of doctor-patient communication ability of residents in a anesthesia standardized training base [J]. *Continuing Medical Education*, 2021, 35 (10): 40-42.
- [3] Liu Li, Zeng Qingyan, Lu Mei, et al. Exploration of the cultivation mode of communication ability of stomatology students [J]. *Continuing Medical Education*, 2023, 37 (03): 5-8.
- [4] Liu Dongjuan, Cui Dan, Sun Fuli, et al. Research on the cultivation of doctor-patient communication ability of stomatology students [J]. *Higher Medical Education in China*, 2021 (5): 70-71.
- [5] Cheng Fang, Yan Hongchun, Fan Lei. Study on practice of curriculum ideological and political teaching in doctor-Patient communication course [J]. *Research and Practice in Medical Education*, 2022, 30 (3): 337-341.
- [6] Ma Hanying, Zhang Bin, Qin Tianxia, et al. Research on the effect of training on doctor-patient communication skills for medical undergraduates [J]. *Health Vocational Education*, 2022, 40 (9): 12-14.
- [7] Zhang Xuezhi, Ling Yunyang, Wang Guanfa, et al. Application of situational simulation and case teaching in surgery teaching [J]. *Medical Theory and Practice*, 2015, 28 (10): 1397-1399.
- [8] Li Feifei, Xiao Hua, Yao Ying, et al. Construction of humanistic teaching system for orthodontic training in digital media era [J]. *Medical Education Research and Practice*, 2023, 31 (03): 332-335+397.
- [9] Makoul G. The SEGUE framework for teaching and assessing communication skills [J]. *Patient Educ Couns*, 2001, 45 (1): 23-34.
- [10] Yuan Haichao, Chen Jianping, Huang Guoqiang. Application Value of Scenario Simulation Teaching in Clinical Practice Teaching of Neonatal Department [J]. *Continuing Medical education in China*, 2023, 15 (18): 61-65.
- [11] Wang Qinyu, Sun Bing, and Shao Liping. Exploring the effect of teaching methods based on clinical scenario simulation and role playing on hand hygiene of clinical practice nursing students [J]. *Journal of the Logistics College of the Armed Police Force (Medical Edition)*, 2021, 30 (12): 157-158, 163.
- [12] Wu Xionglin, Chen Tiejiang, Ji Mingxia, et al. Teaching practice and research of situational simulation teaching and standardized patient mode in emergency practice [J]. *Clinical and Education in General Practice*, 2021, 19 (11): 1018-1019.
- [13] Liu Ye, Liu Chunyan, Liu Yang, et al. Application and experience of WeChat platform combined with case-based learning in the experimental teaching of orthodontics [J]. *Education and Teaching Forum*, 2020, 1 (4): 338-341.
- [14] Zhao Guoguang, Zhang Hongyu, Du Shuying. Study on the application of case teaching method in the internship of Doctor-Patient Communication [J]. *China Diseases*, 2015, 16 (8): 84-86.
- [15] Zhang Xiaoyun, Xue Sisi, Yang Yinan, et al. Application of situational simulation teaching in surgical training course [J]. *Jilin Medical*, 2022, 43 (2): 576-577.