

Doctor-patient Communication skills training for Postgraduate majoring in Oncology Radiotherapy

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Abstract

Objective: To evaluate the communicative ability of doctor-patient education for postgraduates majoring in oncology radiotherapy, and to discuss the training mode and effect.

Methods: From January 1, 2018 to June 1, 2019, clinical interns of oncology radiotherapy in our hospital (all graduate students) were selected as the research subjects and randomly divided into two groups. A total of 60 cancer radiotherapy interns were randomly divided into experimental group (30 persons) and control group (30 persons); CBL teaching model (introducing training of doctor-patient communication skills) is adopted in experimental group, and traditional CBL teaching model is used in control group. After the end of the teaching, the two groups' teaching effects are evaluated through the combination of examinations and questionnaires. SPSS 19.0 was applied to do statistical analysis, t test and Wilcoxon were used.

Results: SEGUE baseline score of experimental group for doctorpatient communication skills is better than that of SEGUE in the control group, and the difference was statistically significant ($P < 0.05$).

Conclusion: The CBL teaching model which introduces training of doctor-patient communication skills in the practical process in cancer radiotherapy division is conducive to develop practitioners' good doctor-patient communication and interaction skills.

Introduction

With the improvement of people's cultural level, medical development has been transformed from a biomedical model to a biological-psychological-social medical model. Patients attach more and more importance to participation in medical activities. Modern doctors must not only have pure medical skills to relieve pain for patients, but also have good communication skills to understand the psychological needs of patients and provide better services to patients[1]. Doctor-patient communication is the bond of communication between doctors and patients. In the current medical environment, the ability of doctor-patient communication is also an objective requirement for the social role of doctors. Therefore, the ability of doctor-patient communication plays an increasing role in improving the quality of medical care[2]. According to estimates from the International Cancer Research Center, the number of cancer patients worldwide is gradually increasing at a rate of 3–5% each year. In the practice teaching of tumor radiotherapy, when the patient is first diagnosed with a malignant tumor, they often experience a stronger emotional shock than any other disease, and often have communication difficulties with medical staff. Therefore, radiotherapy doctor must adopt different communication methods and skills according to the different psychological characteristics of each patient during the communication of the disease. At the same time, in the tumor radiotherapy ward, doctor-patient communication includes not only the communication between the doctor and the patient, but also the communication between the doctor and the patient's family. Effective doctor-patient communication is the key to establishing mutual trust between doctors and patients, and is an important part of whether patients can be effectively treated.

Medical education and talent training is a comprehensive project. Due to the lack of clinical experience, the graduate students cannot form good communication with patients during their first contact with the clinical process, so how to enhance the training of graduate doctor-patient communication skills is an important part of current medical education[3–4]. In the process of clinical teaching, how to enhance the patient's confidence in treatment by enhancing the doctor-patient communication ability of postgraduate students of tumor radiotherapy, and ultimately improve the treatment experience and effect of patients is the most important part in the clinical teaching of tumor radiotherapy.

1 Materials And Methods

1.1 General Information

From January 1, 2018 to June 1, 2019, clinical interns of oncology radiotherapy in our hospital (all graduate students) were selected as the research subjects, specialty for clinical medicine, and randomly divided into two groups. A total of 60 cancer radiotherapy interns were randomly divided into experimental group (30 persons) and control group (30 persons); CBL teaching model (introducing training of doctor-patient communication skills) is adopted in experimental group, and traditional CBL teaching model is used in control group. Among them, 30 were in the experimental group, 13 were boys and 17 were girls; 30 students in the control group, 12 boys and 18 girls. All students in this study participated voluntarily. Before the study, all students participated in the questionnaire survey of clinical doctor-patient communication, and participated in the research throughout the process, there was no withdrawal. There was no significant difference in gender, age and grade between the two groups of students ($P > 0.05$), as shown in Table 1. The two groups are comparable. The two groups of graduate students are taught by one tumor radiation therapy teacher.

Table 1
General information of the experimental group
and the control group(n)

Factor	Experimental group	Control group
Gender		
Boys	13	12
Girls	17	18
Age(year)		
< 20	0	1
20–25	29	27
> 25	1	2
Grade		
First Grade	18	16
Second Grade	10	8
Third grade	2	6

1.2 Teaching Methods

1.2.1 CBL Teaching Method

The specific steps are as follows: 1) Clinical cases and syllabus are sent to students one month before teaching, choose the simpler and more common tumor radiotherapy cases. 2) Before the course, make a brief statement and ask questions about the case, including the concept of disease, epidemiology, diagnostic points, radiotherapy methods, etc. 3) Postgraduate students will ask questions and think based on the questions prepared in advance, and the professional teachers will give appropriate guidance. 4) 3 days after class, summarize and answer the questions for the case, and the teachers of this major will ask questions and correct their mistakes.

1.2.2 Introduction of CBL Teaching Mode with Doctor-patient Communication Skills Training

Based on CBL, introducing training of doctor-patient communication skills. Under the guidance of the tutor, the experimental group repeated the scenario simulation with the standard patients to inform the diagnosis of malignant tumors and communicate the necessity and side effects of radiotherapy. The content according to the SEGUE scale is divided into 5 parts : 1) communication start; 2) information collection; 3) information giving; 4) understanding of the patient; 5) communication ends. The focus is to understand the patient's condition changes and basic appeals, then feedback the patient's appeals, and ultimately develop mutual trust with patients.

1.3 Evaluation Method of Teaching Effect

1.3.1 Teacher Grading

Clinical examinations are divided into theoretical examinations and operational examinations. Examinations are conducted one week after the graduate student has completed teaching. All questions are randomly selected by computer and scoring of operational exams by the same clinician. The evaluation of doctor-patient communication skills is to randomly match 60 graduate students by computer, videotape the communication between medical students and patients, and evaluated by the same tumor radiotherapy physician according to the SEGUE scale. The scale includes 5 dimensions: communication initiation, information collection, information giving, understanding of patients, and end of communication; the total score of the scale is 25 points. Scoring criteria: communication content items (items 1 to 4, 6 to 11, 16 to 18, 20 to 21, 24 to 25 of the scale)points are given as soon as they appear once; Communication Skills Items (items 5, 12–15, 19, 22–23 of the scale)no points will be awarded as long as they are not done once. The higher the score means the better the student's communication skills.

1.3.2 Student Self-evaluation

One week after the course, a questionnaire survey was conducted for each group of students. The content of the questionnaire includes five items, including the improvement of self-communication ability, the improvement of analytical ability, the solution of the doctor-patient relationship problem, the satisfaction with the teaching mode, and the increased confidence in working in the medical(including 20 small projects, with a total of 50 points).

1.4 Statistical Methods

Statistical analysis of data was performed using SPSS 19.0 software. Measurement data were expressed as ($\bar{x} \pm s$), t test was used, and $P < 0.05$ was considered statistically significant.

2 Results

2.1 Comparison of Postgraduate Evaluation of Doctor-patient Relationship before and after Research

Before and after the study, the degree of evaluation of the doctor-patient relationship between the graduate students in the experimental group and the control group was not statistically significant ($P > 0.05$), as shown in Table 2, Fig. 1–2.

Table 2

Comparison of Postgraduate Evaluation of Doctor-patient Relationship before and after Research [n(%)]

Group	Factor	Harmonious	Nervous	Not nervous	Unknown
Experimental group	Before research	13(43.3)	11(36.7)	5(16.7)	1(3.3)
	After research	10(33.3)	13(43.3)	7(23.3)	0(0.0)
	P	0.410	0.539	0.617	0.558
Control group	Before research	14(46.7)	9(30.0)	5(16.7)	2(6.7)
	After research	10(33.3)	14(46.7)	5(16.7)	1(3.3)
	P	0.151	0.102	0.790	0.307
	X ² /P(Comparison between groups before study)	0.162/0.687	0.384/0.642	0.071/0.790	0.547/0.562
	X ² /P(Comparison between groups after study)	0.174/0.639	0.545/0.514	0.250/0.617	0.665/0.574

2.2 Postgraduates Consider the Factors That Cause Tension in the Doctor-Patient Relationship

Before and after the study, the two groups of graduate students believed that there was no statistically significant difference in the proportion of various factors that caused tension between doctors and patients ($P > 0.05$), as shown in Table 3, Fig. 3–4.

Table 3

Postgraduates consider the factors that cause tension in the doctor-patient relationship before and after Research [n(%)]

Group	Factor	Before research	After research	P
Experimental group	Doctor nurse factor	6(20.0)	12(40.0)	0.029
	Patients factors	7(23.3)	5(16.7)	0.444
	Social media	8(26.7)	7(23.3)	0.640
	Other social factors	9(30.0)	6(20.0)	0.260
Control group	Doctor nurse factor	7(23.3)	7(23.3)	0.453
	Patients factors	7(23.3)	8(26.7)	0.635
	Social media	7(23.3)	7(23.3)	1.000
	Other social factors	9(30.0)	8(26.7)	0.154

2.3 Theory Exam and Operation Exam

In the two groups of clinical assessments, the theoretical test scores of the experimental group were higher than the control group, but the difference was not statistically significant ($P > 0.05$); The operational test scores of the experimental group were lower than the control, and the difference was also not statistically significant, as shown in Table 4.

There was no significant difference in the total score of the SEGUE scale score between the two groups before the study ($P = 0.936$). The score of the control group was slightly improved before and after teaching, but the difference was not statistically significant ($P > 0.05$). The total score of the experimental group increased after teaching, compared with the control group, the difference was statistically significant ($P < 0.001$), as shown in Table 5.

2.4 Evaluation of Doctor-Patient Communication Skills

There was no significant difference in the total score of the SEGUE scale score between the two groups before the study ($P = 0.936$). The score of the control group was slightly improved before and after teaching, but the difference was not statistically significant ($P > 0.05$). The total score of the experimental group increased after teaching, compared with the control group, the difference was statistically significant ($P < 0.001$), as shown in Table 5.

2.5 Student Self-Assessment Survey

The experimental group and control group in the self-assessment survey scores: self-communication ability [(7.32 ± 0.31) points in the experimental group, (7.25 ± 0.44) points in the control group], solving doctor-patient relationship problem [(6.20 ± 0.51) points in the experimental group, (6.16 ± 0.33) in the control group]) and the degree of satisfaction with the teaching mode [(7.83 ± 0.54) points for the experimental group and (7.68 ± 0.60) points for the control group], the scores of the experimental group were higher than the control group, but the difference was not statistically significant ($P > 0.05$), as shown in Table 7.

Doctor-patient communication and communication skills are one of the important abilities of clinicians. Survey shows that more and more medical disputes are currently caused by communication barriers between doctors and patients[15–16]. In addition, the Fukuoka Declaration states: "Such as medical technology, the doctor-patient communication ability of a doctor is also a doctor-level performance. Doctor-patient communication skills are an important indicator of a doctor's success." Good communication skills are essential clinical skills for a good clinician[17]. Therefore, in clinical teaching,

we should step out of the traditional emphasis on knowledge education, strengthen the training of doctor-patient communication and communication skills, strengthen the training of language arts for medical students is an inevitable requirement in the new era and new environment[18].

Emphasize the importance of humane care in medical practice and fully understand the psychological needs of patients. Give guidance when patients are confused, give attention when patients are helpless, encourage them when discouraged, and give comfort when they are anxious[19]. Through communication and exchanges to conduct psychological interaction, finally achieve mutual understanding and cooperation between doctors and patients[20]. Starting from the patient's psychological needs. The respect and care for patients is the core of the clinical communication education between doctors and patients, and the guarantee of building a harmonious doctor-patient relationship[21].

Table 4

Comparison of theoretical and operational test scores[($\bar{x} \pm s$), scores]

Group	Numbers	Experimental group	Control group	t	P
Theory Exam	30	90.1 ± 7.3	87.6 ± 6.1	1.206	0.237
Operation Exam	30	88.3 ± 9.8	89.9 ± 4.8	-1.816	0.080

2.4 Evaluation of Doctor-Patient Communication Skills

Table 5

Comparison of SEGUE scale scores between experimental and control groups[($\bar{x} \pm s$), scores]

Group	Experimental group(n = 30)	Control group(n = 30)	t	P
Before research	14.40 ± 1.48	14.43 ± 1.74	0.80	0.936
After research	17.10 ± 1.45	15.6 ± 1.50	3.94	< 0.001

Table 6

Comparison of SEGUE scale scores before and after training in experimental group

Factor	Before research	After research	t	P
Total score	14.40 ± 1.48	17.10 ± 1.45	6.72	< 0.001
Communication start	2.90 ± 1.00	3.37 ± 0.56	2.45	0.020
Information collection	5.30 ± 0.70	5.87 ± 0.68	2.89	0.007
Information giving	2.50 ± 0.63	2.83 ± 0.95	1.78	0.086
Understanding of the patient	2.37 ± 0.56	3.37 ± 0.56	7.37	< 0.001
Communication ends	1.33 ± 0.48	1.67 ± 0.48	2.41	0.023

Table 7

The experimental group and control group in the self-assessment survey scores[($\bar{x} \pm s$), scores]

Factor	Experimental group	Control group
Self-communication ability	7.32 ± 0.31	7.25 ± 0.44
Solving doctor-patient relationship problem	6.20 ± 0.51	6.16 ± 0.33
The degree of satisfaction with the teaching mode	7.83 ± 0.54	7.68 ± 0.60

Discussion

Medical graduate students will face a special group during their internship in oncology radiotherapy: cancer patients and their families. At present, although the research on malignant tumors has made great

progress, cancer is still an incurable disease, and the medical cost of cancer patients is generally high. Patients and family members often endure the torture of the disease, the pain of treatment, the high medical expenses, and then face the tumor recurrence, metastasis and disease progression, which often cause great psychological pressure[5]. On the one hand, due to the lack of patient awareness of malignant tumors, they have a strong psychological dependence on doctors. On the other hand, because the efficacy of radiotherapy often fails to meet their psychological expectations, they also have a sense of distrust to doctors. This places higher demands on medical staff. Need them to communicate more patiently and carefully. To explore the different needs of patients, and help patients build the right understanding of the disease[6]. Existing research proves that psychological supportive treatment and surgery, chemotherapy, radiotherapy and other treatment methods have equal importance in the clinical treatment and rehabilitation of cancer[7]. Therefore, strengthen the doctor-patient communication for the diagnosis and treatment related issues that patients are most concerned about. Fully explain the disease changes and prognosis with patients and their families. Giving proper psychological support is crucial to the doctor-patient relationship and to ensure the smooth progress of examinations and treatments.

In clinical work, insufficient communication and communication obstacles between doctors and patients are common problems, and it is also one of the important reasons that cause doctor-patient contradictions and even medical accidents. Currently, the first-line medical workers are often young resident physician. Therefore, how to cultivate their doctor-patient communication skills during the internship stage of graduate students is very important. Good doctor-patient communication can help build a trustful relationship between doctors and patients. Especially for patients treated in oncology radiotherapy, anxiety manifests at all stages of a patient's illness. If the treatment is only symptomatic, and the psychological needs of the patient are ignored, the condition may be aggravated and the quality of life and survival of the patient may be seriously affected[8]. Therefore, good doctor-patient communication can alleviate the patient's anxiety, make the patient treat the disease more actively, and finally improve the 5-year survival rate of the patient and improve the quality of life of patients with advanced cancer[9-10].

The CBL teaching method uses clinical cases, allow students analyze problems proactively, study literature and take the form of group discussions to ask and solve problems in clinical cases, thereby promote students' ability to develop clinical thinking. However, the current medical environment requires medical students not only to learn to treat, but also need to learn to communicate with patients[11-12]. Therefore, CBL teaching model (introducing training of doctor-patient communication skills) is particularly important for the education of postgraduates in tumor radiotherapy. This article compares the CBL teaching method with the CBL teaching model (introducing training of doctor-patient communication skills). Using the SEGUE scale as an evaluation method before and after teaching can evaluate students' ability to solve clinical problems, which is conducive to the cultivation of good professional attitudes, behaviors and interpersonal communication skills. The results showed that the SEGUE scale score of the experimental group trained by doctor-patient communication skills was higher than the control group, and the difference was statistically significant ($P < 0.05$). It shows that the addition of doctor-patient communication training in the CBL teaching mode has achieved significant results. In addition, there are

no significant differences in the operational tests and theoretical tests between the two groups, which means that the addition of additional doctor-patient communication training will not significantly change the students' theoretical operation ability.

Due to the complexity and specificity of malignant tumor disease itself, tumor radiotherapy often has mild or severe adverse reactions. As a postgraduate student of tumor radiotherapy, who must make correct judgments and treatments, and truthfully inform patients and family members about the treatment programs and what will happen after the disease develops to ensure that cancer patients have fully understand the diagnosis and treatment plan. Patients and their families have the right to know the condition about the disease. Postgraduate student need to accurately, timely and effectively inform the disease, provide necessary psychological counseling for patients and their families, that can effectively alleviate the patient's panic and make them trust doctors more, and promote healthy development of doctor-patient relationship[13]. Studies have evaluated anxiety and depression in women with breast cancer one year after diagnosis, those who were satisfied with the initial disease notification were significantly less anxious and depressed than those who were dissatisfied[14].

Doctor-patient communication and communication skills are one of the important abilities of clinicians. Survey shows that more and more medical disputes are currently caused by communication barriers between doctors and patients[15-16]. In addition, the Fukuoka Declaration states: "Such as medical technology, the doctor-patient communication ability of a doctor is also a doctor-level performance. Doctor-patient communication skills are an important indicator of a doctor's success." Good communication skills are essential clinical skills for a good clinician[17]. Therefore, in clinical teaching, we should step out of the traditional emphasis on knowledge education, strengthen the training of doctor-patient communication and communication skills, strengthen the training of language arts for medical students is an inevitable requirement in the new era and new environment[18].

Emphasize the importance of humane care in medical practice and fully understand the psychological needs of patients. Give guidance when patients are confused, give attention when patients are helpless, encourage them when discouraged, and give comfort when they are anxious[19]. Through communication and exchanges to conduct psychological interaction, finally achieve mutual understanding and cooperation between doctors and patients[20]. Starting from the patient's psychological needs. The respect and care for patients is the core of the clinical communication education between doctors and patients, and the guarantee of building a harmonious doctor-patient relationship[21].

Conclusion

In summary, For clinical interns, especially postgraduates in a special type of clinical department of tumor radiotherapy, the traditional teaching mode often ignores the importance of the training of doctor-patient communication skills, and patients of tumor radiotherapy need more care from doctors. Therefore, by appropriately joining the training of doctor-patient communication and communication

skills under the CBL mode, it will help the postgraduates of tumor radiotherapy to cope with future medical work more freely, create a harmonious doctor-patient relationship and establish a good image for the hospital.

Abbreviations

CBL: case based learning

Declarations

Ethics approval and consent to participate

This article was approved by Ethics Committee of Harbin Medical University Cancer Hospital. Written informed consent was obtained from all participants and the study was conducted according to the bylaws of the institution.

Consent for publication

Not applicable.

Availability of data and materials

All data and materials are fully available without restriction.

Competing interests

The authors declare that they have no competing interests.

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Authors' contributions

Guohui Liu: participated in study design and coordination, drafted and finalized the manuscript.

Feng Liu: substantial contributions to the conception and design of the work.

Chunbo Wang: acquisition, analysis, and interpretation of data for the work.

Tian Lan: participated in the statistical data analysis.

Mingyan E: responsible for the guidance and proofreading of the paper.

All authors have contributed significantly, and that all authors read and approved the final manuscript.

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References

- [1] Anne Simmenroth-Nayda, Stephanie Heinemann, Catharina Nolte, Thomas Fischer, Wolfgang Himmel. Psychometric properties of the Calgary Cambridge guides to assess communication skills of undergraduate medical students. *Int J Med Educ*, 2014, 5:212-218.
- [2] Jiong Tu, Ge Kang, Jiudi Zhong, Yu Cheng. [Outpatient communication patterns in a cancer hospital in China: A qualitative study of doctor–patient encounters](#). *Health Expect*. 2019 Jun; 22(3): 594–603.
- [3] F. Fischer, S. Helmer, A. Rogge, J. I. Arraras, A. Buchholz, A. Hannawa, M. Horneber, A. Kiss, M. Rose, W. Söllner, B. Stein, J. Weis, P. Schofield, C. M. Witt. Outcomes and outcome measures used in evaluation of communication training in oncology – a systematic literature review, an expert workshop, and recommendations for future research. *BMC Cancer*. 2019; 19: 808.
- [4] Hyo Hyun Yoo, Sein Shin, Jun-Ki Lee. [Effects of medical communication curriculum on perceptions of Korean medical school students](#). *Korean J Med Educ*. 2018 Dec; 30(4): 317–326
- [5] Ourania Govina, Eugenia Vlachou, Ioannis Kalemikerakis, Demetrios Papageorgiou, Anna Kavga, Theocharis Konstantinidis. Factors Associated with Anxiety and Depression among Family Caregivers of Patients Undergoing Palliative Radiotherapy. *Asia Pac J Oncol Nurs*. 2019 Jul-Sep; 6(3): 283–291.
- [6] Paul Holyoke, Barry Stephenson. [Organization-level principles and practices to support spiritual care at the end of life: a qualitative study](#). *BMC Palliat Care*. 2017; 16: 24
- [7] Zohreh Khoshnood, Mahlegha Dehghan, Sedigheh Iranmanesh, Masoud Rayyani. [Informational Needs of Patients with Cancer: A Qualitative Content Analysis](#). *Asian Pac J Cancer Prev*. 2019; 20(2): 557–562.
- [8] R. Constance Wiener, Christopher Waters, Joan Doris, Daniel W. McNeil. [Comparison of Dental Students' Self-Evaluation and Faculty Evaluation of Communication Skills During a Standardized Patient Exercise](#). *J Dent Educ*. 2018 Oct; 82(10): 1043–1050.
- [9] Sriram Yennurajalingam, Supakarn Tayjasanant, Dave Balachandran, Nikhil S. Padhye, Janet L. Williams, Diane D. Liu, Susan Frisbee-Hume, Eduardo Bruera. Association between daytime activity, fatigue, sleep, anxiety, depression, and symptom burden in advanced cancer patients: a preliminary report. *J Palliat Med*, 2016, 19(8):849-856.
- [10] Giovanni Ostuzzi, Faith Matcham, Sarah Dauchy, Corrado Barbui, Matthew Hotopf. [Antidepressants for the treatment of depression in people with cancer](#). *Cochrane Database Syst Rev*. 2018 Apr; 2018(4): CD011006.

- [11] Murphy S, Imam B, MacIntyre DL. Standardized patients versus volunteer patients for physical therapy Students' interviewing practice: a pilot study. *Physiother Can.* 2015;67:378–84.
- [12] Carroll AJ, Tchangalova N, Harrington EG. Flipping one-shot library instruction: using Canvas and Pecha Kucha for peer teaching. *J Med Libr Assoc.* 2016 Apr;104(2):125–30.
- [13] Smita C. Banerjee, Ruth Manna, Nessa Coyle, Megan Johnson Shen, Cassandra Pehrson, Talia Zaider, Stacey Hammonds, Carol A. Krueger, Patricia A. Parker, Carma L. Bylund. [Oncology nurses' communication challenges with patients and families: A qualitative study.](#) *Nurse Educ Pract.* 2016 Jan; 16(1): 193–201.
- [14] A. Frisell, J. Lagergren, J. de Boniface. [National study of the impact of patient information and involvement in decision-making on immediate breast reconstruction rates.](#) *Br J Surg.* 2016 Nov; 103(12): 1640–1648.
- [15] Ruiz moral R, Caballero Martínez F, Garcia de Leonardo C, Monge D, Cañas F, Castaño P. Teaching and learning clinical communication skills in Francisco de Vitoria medical school (Madrid) *Educ Med.* 2017;18(4):289–297.
- [16] Aitini E, Martignoni G, Labianca R, Italian Group for the study of Digestive Tract C. Communication models for doctor-patient relationships. *J Cancer Educ.* 2014;29:211–2.
- [17] Tu J, Kang G, Zhong J, Cheng Y. Outpatient communication patterns in a cancer hospital in China: a qualitative study of doctor-patient encounters. *Health Expect.* 2019;22(3):594–603.
- [18] Hu W, Song Y, Zhong X, Feng J, Wang P, et al. Improving doctor-patient communication: content validity examination of a novel urinary system-simulating physical model. *Patient Prefer Adherence.* 2016;10:2519–29.
- [19] Henry SG, Holmboe ES, Frankel RM. Evidence-based competencies for improving communication skills in graduate medical education: a review with suggestions for implementation. *Med Teach.* 2013;35(5):395–403.
- [20] Wuensch A, Tang L, Goelz T, Zhang Y, Stubenrauch S, et al. Breaking bad news in China—the dilemma of patients' autonomy and traditional norms. A first communication skills training for Chinese oncologists and caretakers. *Psychooncology.* 2013;22:1192–5.
- [21] Jiangjie Sun, Liping Zhang, Ruochuan Sun, Yuanyuan Jiang, Xiuyun Chen, Chengsen He, Jiuchang Wei. [Exploring the influence of resiliency on physician trust in patients: An empirical study of Chinese incidents.](#) *PLoS One.* 2018; 13(12): e0207394

Figures

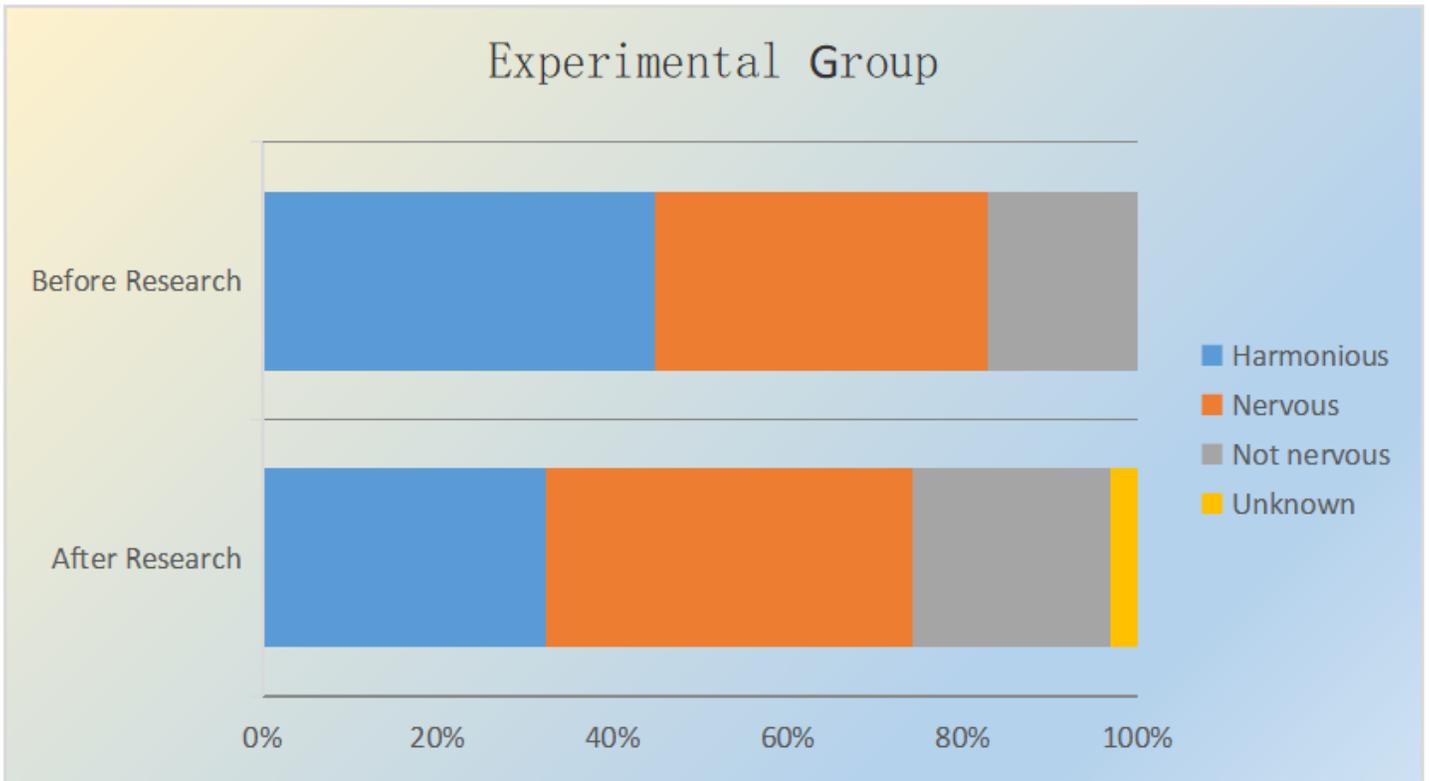


Figure 1

Comparison of evaluation of doctor-patient relationship before and after postgraduate study in the experimental group.

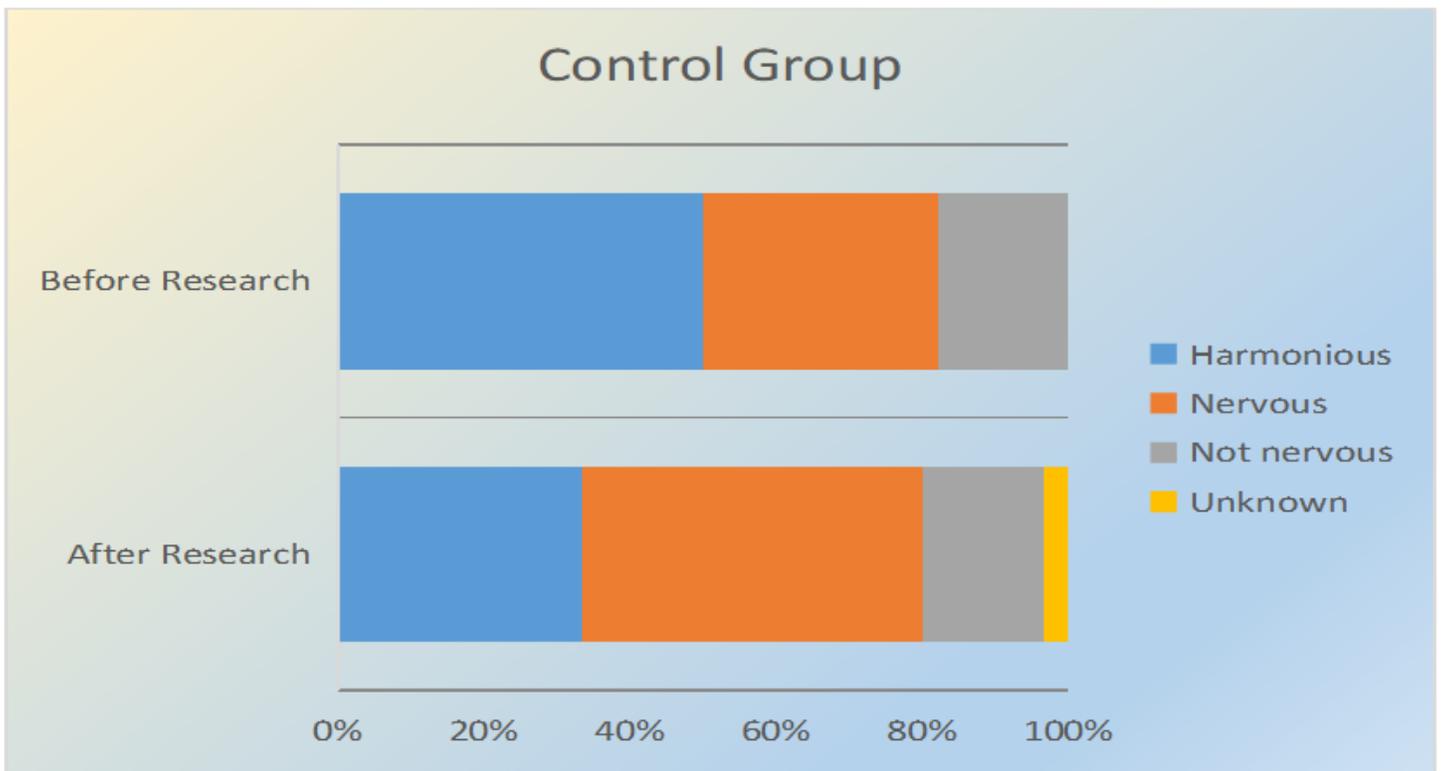


Figure 2

Comparison of evaluation of doctor-patient relationship before and after postgraduate study in the control group.

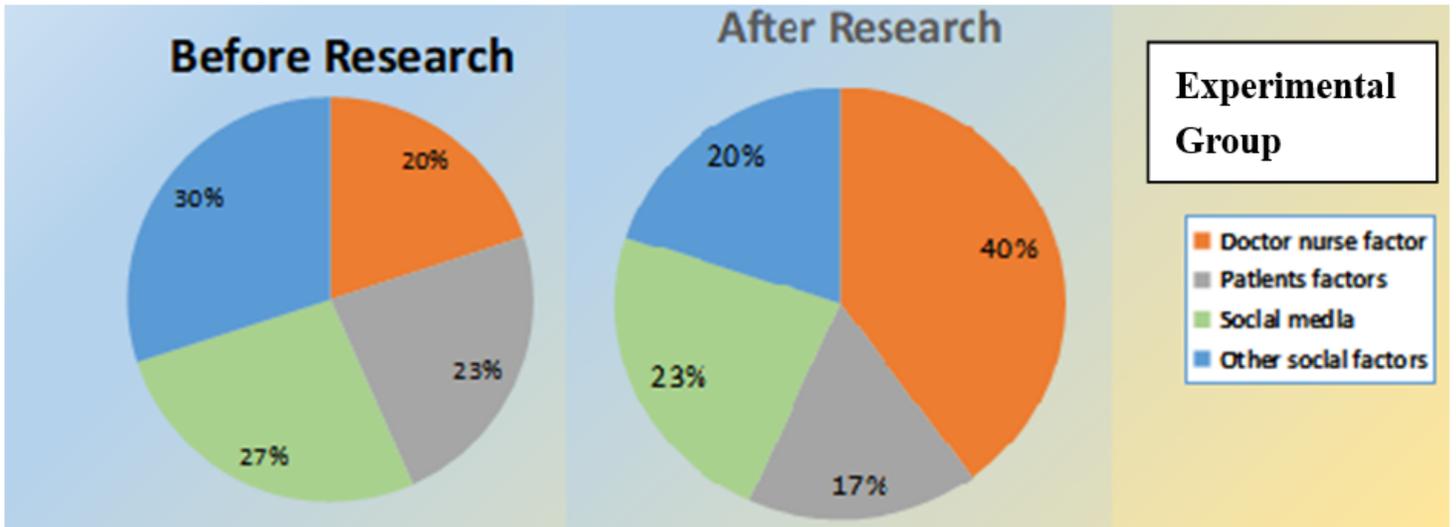


Figure 3

Postgraduates consider the factors that cause tension in the doctor-patient relationship(Experimental group)

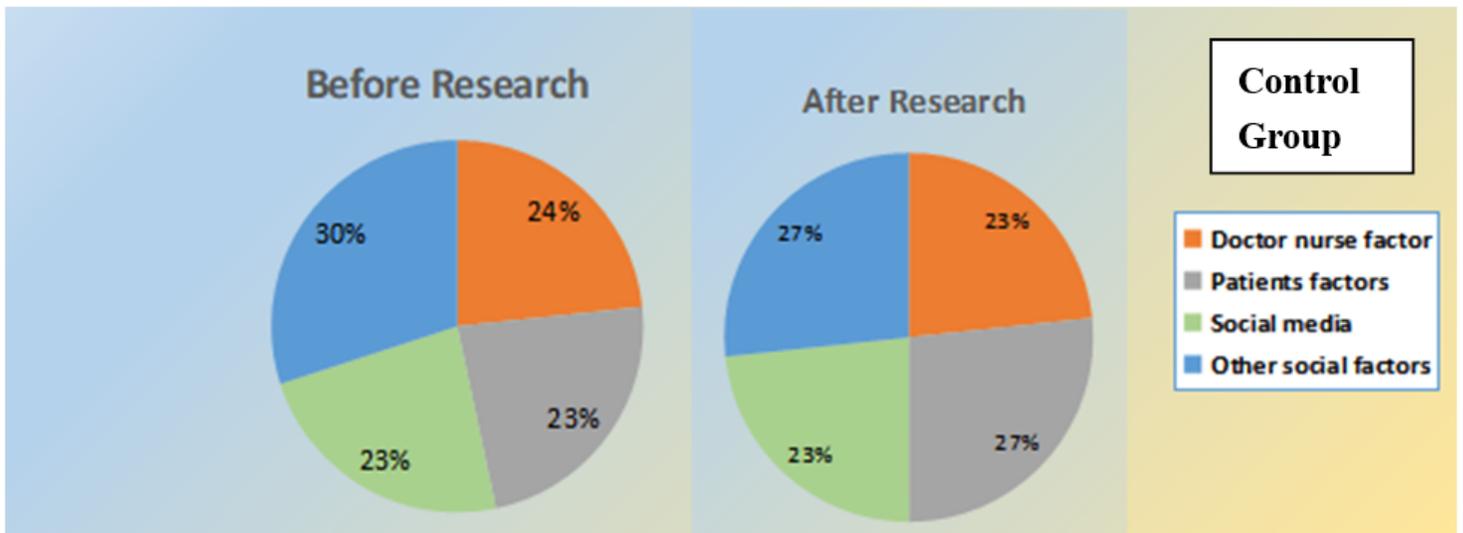


Figure 4

Postgraduates consider the factors that cause tension in the doctor-patient relationship(Control group)