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THE APPLICATION OF SIMULATION TEACHING METHODS IN CLINICAL TEACHING OF SURGERY OF CHINESE MEDICINE

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The Application of Simulation Teaching Methods in Clinical Teaching of Surgery of Chinese Medicine

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I. INTRODUCTION

Medical simulation teaching is a process in which real clinical situations are simulated and teaching methods highly according to medical ethics are adopted; while it is performed, all simulative and virtual devices that can be available are used to design teaching conditions, including patients, scenes, laboratories for subject skill training and assessment, wards, operating rooms and hospitals, all of which are effective aids for theoretical teaching and clinical practice; it can promote clinical diagnostic ability and clinical operation skills of medical college students across-the-board, foster their quicken and correct clinical thinking, help reduce the occurrence of medical negligence and tangle in clinical practice and enable the students to go smoothly through the following three stages: study of theory, being permitted to become a doctor and clinical practice [1]. In addition, simulation teaching methods can help the students learn a basic knowledge of clinical work and facilitate them learning the ropes of their professions in the future [2]. In this

study, we collected information about how teachers and students appraised different models of teaching via questionnaire surveys, performed clinical simulation teaching of surgery of Chinese medicine in hospitals and evaluated teaching quality by examinations.

II. METHODS

a) Questionnaire surveys

i. Questionnaire design

Questionnaires were to be filled out by informants and fell into two sorts, one for teachers and the other for students. We preserved the anonymity of all informants so as to respect their privacies.

Questionnaires for students: Collecting information about how much students from Guangxi University of Chinese Medicine were satisfied with teachers' teaching methods, the requirements for satisfaction including ① If teachers used teaching methods flexibly; ② If teachers used simulation teaching methods; ③ If teachers placed emphases upon communication between themselves and students; ④ If teachers offered students guidance on how to study. The students were to be asked: How many teachers have met the requirements. The numbers of such teachers were classified into five levels: all (100% teachers used a certain method), majority (75% teachers used a certain method), half (50% teachers used a certain method), minority (25% teachers used a certain method) and none (0% teachers used a certain method).

a. Questionnaires for teachers (Part I) :

This part was to collect information about where teachers from Guangxi University of Chinese Medicine got knowledge sources of simulation teaching. To explore the feasibility of simulation teaching, we needed to learn about how much teachers were familiar with it and about what teachers thought if it were introduced. Only by gathering this information could we do better in simulation teaching. We supplied solutions to every question about simulation teaching trial put forward by teachers and tried to clear away obstacles to the trial. In this part, we designed a question in which the knowledge sources of simulation teaching were classified into four categories: ① Foreign literature; ②

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Domestic literature; ③ Others (broadcast, television, newspaper, oral message, etc.); ④ I don't know.

b. *Questionnaires for teachers (Part II) :*

This part was to collect information about what attitude teachers from Guangxi University of Chinese Medicine maintained towards the introduction of simulation teaching methods. For this purpose, we designed another question: What's your attitude towards the introduction of simulation teaching methods? There were four answer choices: completely agree; partially approve; I don't care; disagree.

ii. *Informants*

The informants of our surveys were teachers and students from Guangxi University of Chinese Medicine in 2009. All the teachers were engaged in teaching, and all the students were undergraduates receiving a five-year education program.

iii. *Sampling methods*

Student informants were selected by numerically random sampling from the roster of the dean's office, and the questionnaires for them were distributed and collected by the class manager; teacher informants were chosen in technical title order by numerically random sampling.

b) *Quality evaluation of simulation teaching methods*

i. *Objects and grouping*

Objects of this part of research were 120 full-time undergraduate interns of Year 2005 majoring in surgery of Chinese medicine from the First Affiliated Hospital of Guangxi University of Chinese Medicine. They were randomly divided into two groups, experiment group (52) and control group (68).

ii. *Curriculum, class hour and teaching method*

Curriculum and class hour : The lessons were given according to teaching program and plan when the objects were studying at No. 5 Surgical Department of the First Affiliated Hospital of Guangxi University of Chinese Medicine.

Teaching methods : The experiment group was taught with the following methods.

① Teachers should give priority to heuristic mode of teaching, and they should perform teaching in various ways. They should guide students to teaching themselves the textbook, organize focus discussions on cases, treatment and other related problems and hold simulative consultations in class so as to bring students' enthusiasm into full play and optimize classroom atmosphere and promote students' ability.

② Starting from subjective complaint of patients, students rehearsed diagnostic work following "analysis – obtaining evidence – exclusion – confirmation" step by step. Then they received the following standard treatment training: selection of optimal therapeutic regimen – observation of new

developments – adjustment of measures – diagnosis confirmation – analysis of prognostic factors – plan for recovery. By doing so, the students may develop a systematic structure of knowledge based on the textbook.

③ Teachers should focus on the instruction of focal and doubtful points and try to reduce or avoid repetition in content of the textbook so that the students could deepen cognition and comprehension of the knowledge they have learnt and memorize them.

The control group was taught with conventional teaching methods – teachers played the lead and made summaries at the end of class.

iii. *Evaluation of teaching quality*

Examination : Both groups took closed-book examinations; examination room and timetable and invigilation were arranged by the Section of Teaching Affairs.

Examination questions : Questions were selected from the question bank or set independently. They fell into two types, namely objective and subjective. Objective questions accounted for 60% of all the questions in an exam, including multiple-choice, gap-fill, true/false and matching questions; the design of these questions was to measure how much students have understood and memorized the basic concepts and theory of surgery of Chinese medicine. Subjective questions (40%) included essay questions and case analysis; they were designed to measure students' ability to understand and make analysis and judgement and apply theory to practice. The reference key to all questions was offered before both were sent to the Section of Teaching Affairs.

Marking : The examination papers were enveloped with paper bags by invigilators and submitted to paper markers.

iv. *Statistical analysis*

Results of the questionnaire surveys were analyzed with Ridit test.

III. RESULTS

a) *About how much students were satisfied with teachers' teaching methods*

A total of 1477 questionnaires were distributed, 1470 being valid. From them, we learnt that the students were more satisfied with that the teachers attached importance to communication and taught in a flexible way, and less satisfied with the use of simulation methods and guidance on how to study (Table 1).

b) *About where teachers got knowledge sources of simulation teaching*

A total of 256 questionnaires were distributed. As regards the knowledge source of simulation teaching, the results show that 55 teachers got it from foreign literature, 136 teachers from domestic literature,

40 teachers from others, and 25 teachers were uncertain about it. This indicates that teachers mostly acquired knowledge of simulation teaching from domestic literature.

Table 1 Evaluation of how much students were satisfied with teachers' teaching methods. All, majority, half, minority and none are levels to show how many teachers apply a certain method.

Teaching method	Evaluation level and informant number				
	All	Majority	Half	Minority	None
Flexibility	319 (22%)	591 (40%)	356 (24%)	204 (14%)	0 (0)
Simulation	208 (14%)	313 (21%)	344 (23%)	300 (20%)	305 (22%)
Communication	699 (48%)	627 (42%)	105 (7%)	39 (3%)	0 (0)
Guidance	376 (26%)	432 (29%)	315 (21%)	150 (10%)	197 (14%)

c) About teachers' attitude toward introduction of simulation teaching methods

From the 256 questionnaires we distributed, we knew that 129 teachers were in full agreement with the introduction of simulation teaching methods, 86 teachers partially approved it, 32 teachers were indifferent to it and 9 teachers were against it. That is to say, most teachers were in favor of the introduction of simulation teaching methods.

classified into four levels: ≥ 85 – excellent; 70-84 – good; 60-69 – pass; < 60 – fail. The result reveals that, students in the experiment group got a better academic record than those in the control group, and the difference between both groups was significant ($P < 0.05$), indicating that simulation teaching methods were better than the conventional ones and deserved to be spread clinically. (Table 2).

d) Evaluation of teaching quality of simulation teaching methods

The academic record of students in both groups (experiment group and control group) was

Table 2: Evaluation of teaching quality of simulation teaching methods.

Group	Number	Evaluation level			
		Excellent	Good	Pass	Fail
Experiment group	52	18	26	7	1
Control group	68	12	32	21	3

Note : Analyzed with Radit test, $u=2.5739$, $P<0.05$.

IV. DISCUSSION

Medical college students should receive as much basic clinical training as possible, and strengthen the ability to do logical reasoning and integration by practice so as to know how to summarize all the information of patients step by step and interpret patients' performances using relevant theory. However, teachers play the lead and give instruction whereas students play a passive role as an audience during conventional teaching [3]. Moreover, the clinical teaching under a conventional teaching environment is hard to meet the demand of current teaching characterized by being systematic, large-scale and comprehensive. So it is difficult for conventional clinical teaching to produce results that reaching the objective of current clinical teaching.

Good teaching methods are a prerequisite to the promotion of teaching quality, and the basis for ability enhancement as well [4]. As a new teaching model, simulation teaching is in essence a teaching activity centering on patients and questions; it can to a great extent motivate the students, thoroughly acquaint them with what they have learned, increase their capacity for problem analysis and solving, enhance their awareness of that patients are the focus of clinical work and help them establish a relatively solid foundation for clinical practice [5]. In the whole course of simulation teaching, students play the leading role and experience the processes of hard reading, information searching, plan designing, discussion, simulated operation, summing up and evaluation; they are in the state of active learning and exploration from beginning to end.

Practice is the basis on which traditional Chinese medicine came into being, and clinical teaching of traditional Chinese medicine is an important part of the talent development in higher education of traditional Chinese medicine and a key teaching stage in which students integrate the theory of traditional Chinese medicine with clinical practice. In clinical teaching, many practices are arranged; students are generally organized to learn by watching clinical practices after they have received a part of medical theoretical lessons and go on a field trip to a hospital when all lessons are finished. In addition, clinical teaching is a significant step to the cultivation of practical talents characteristic of high medical ethics, good work style, full grasp of basic knowledge and strong hands-on capability; it conditions a smooth transition from medical student to junior doctor and the development of high-quality practical clinical talents of surgery of Chinese medicine^[6-8]. With the system reform and enrollment expansion in colleges and universities, change in medical environments, increase in employment pressure and other similar factors, the traditional clinical teaching model has failed to satisfy the need of the great majority of students and even has become an obstacle to intern doctors' learning. Therefore, great importance must be attached to clinical teaching, and a new model suitable for clinical teaching of surgery of Chinese medicine should be explored.

Our Questionnaire surveys show that students were dissatisfied with teachers employing the conventional teaching model, and that the overwhelming majority of teachers were in favor of the introduction of a simulation teaching model, so it is of significance to popularize simulation teaching methods. Based on the fact that the conventional teaching methods have been out of date, we probed into the use of a new teaching model, and introduced simulation teaching methods to clinical teaching of surgery of Chinese medicine. This may offers a new idea for the reform of the traditional teaching model. From the results of our study, we know that simulation teaching methods are significantly better than the conventional ones, and that simulation teaching methods can help improve hands-on ability, facilitate grasp of autonomic learning ways, develop the ability to think in a scientific way, broaden the ken, arouse students' interest in science and cultivate the spirit of scientific exploration in students. Simulation teaching methods can also help build closer relations between teachers and students, make the assessment of students simpler, reduce the cost of teaching with practice and promote teaching quality. They are valuable methods for clinical teaching, and deserve to be popularized clinically.

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