The Effect of Videotaping Students' Interviews with Patients for Interview Skill Education

Original Article

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Background: The importance of communication between patients and physicians has been proven in many previous studies. The authors analyzed the effect of interview skill education through videotapes which recorded students' interviews with real patients in the outpatient department of family medicine.

Methods: This study was conducted with all students who chose the elective course of family medicine and one randomly selected student every week from an 'infectious internal medicine' class at Dongguk University Ilsan Hospital during the period from December 2008 to March 2011. All students performed a preliminary examination of a new patient at the outpatient department of family medicine. All consultations were videotaped. Feedback to the student was given on the same day by viewing the videotape together. After feedback, all students performed another preliminary examination of one new patient at the department of family medicine the same week. Three family medicine residents scored all videotapes using 10-item interview skill checklists. Many parts of the checklists were modified using the Arizona Clinical Interview Rating Scales.

Results: Thirty-three students participated. Of 10 items, nine showed increased scores after feedback. There was a significant change in four items after feedback: 'type of question' (before 2.36 ± 0.60 , after 2.73 ± 0.72), 'timeline' (before 2.82 ± 0.68 , after 3.18 ± 0.73), 'positive verbal reinforcement' (before 2.24 ± 0.56 , after 2.61 ± 0.90), and the total score (before 21.70 ± 2.62 , after 23.39 ± 3.13) (P < 0.05).

Conclusion: Giving feedback to medical school students on medical interview skills using videotapes of students' preliminary consultations with real patients in outpatient settings, was effective in improving the interview areas of 'type of question,' 'timeline,' 'positive verbal reinforcement,' and the total interview scores.

Keywords: Medical Schools; Undergraduate Education; Outpatients; Communication; Videotape Recording

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INTRODUCTION

The importance of communication between patients and physicians has been proven in many previous studies.¹⁾ Quality, quantity, and accuracy of patients' information rely on the physician's interview skills. About 80% of diagnoses in outpatient settings were made by history taking.²⁻⁴⁾ This means that interview skills directly affect the accuracy of diagnosis.⁵⁾

Effective communication builds a 'therapeutic alliance' that affects patients' compliance with therapeutic plans, medication,

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and lifestyle changes.⁶⁻⁸⁾ Effective communication was also deeply connected with patients' satisfaction, physicians' satisfaction, patients' compliance, and treatment outcomes. Ineffective communication was connected with patients' dissatisfaction, and medical litigations.^{9,10)} Patient-centered communication skills can bring about patients satisfaction, positive effects for the patients' health, reduction of medical litigations, patient compliance, and accuracy of diagnosis.¹¹⁾

Several interview-skill education programs have been created. However, Korean medical schools tend to prefer education programs that contain face-to-face meetings between patients and medical school students during clinical training. However, during clinical training, medical school students do not have enough time to visit new patients directly. They usually meet patients whose diagnoses were already known. This leads medical school students to only consider biomedical aspects of disease. For medical school students, clinical classes lack opportunities for evaluating and debating methods of improving interview skills, but instead put greater emphasis on acquiring medical knowledge. 12)

Recently, videotaping clinical interviews between resident-physicians and patients improved interview skills among resident-physicians. Videotaping allows accurate evaluation of interviews after they have occurred. It also enables instructors to give immediate feedback to interviewers. This videotaping method also has the advantages of allowing evaluation of interviews by the interviewer himself. This whole process educationally benefits the interviewer.

In 2009, the 'patient encounter test' was adopted for the doctor' s license test in Korea. ¹²⁾ Thus, abilities of building relationships, gathering information, and educating patients became more important. Practicing with standardized patients and outpatients can be advantageous for preparing the test. However, until now, no research was performed on the educational effectiveness of videotaping interviews of real outpatients by student physicians. Therefore, our team performed this research to test the hypothesis that 'videotaping medical interviews of real patients by student physicians in outpatient settings and giving feedback using this pre-recorded method can be effective for improving interview skills of medical school students.

METHODS

1. Study Subjects and Time Period

This study was conducted with all students who chose the elective course of family medicine and one randomly selected student every week from an 'infectious internal medicine' class at Dongguk University Ilsan Hospital during the period from December 2008 to March 2011. All students performed a preliminary examination of one new patient at the outpatient department of family medicine. All consultations were videotaped. We analyzed all the videos. This research was authorized by the institutional review board of Dongguk University Ilsan Hospital. Informed consent was obtained for all students and patients in this study.

2. Research Procedures and Analysis

First, we had student physicians give preliminary examinations. After we videotaped those interviews, the video was presented to the student physicians, residents and family medicine professors. After watching those videos, the student physicians received feedback from the residents and the professors. After 3 to 4 days later, student physicians held one more preliminary examination. Professors and residents gave feedback as before.

Research was conducted with new patients of the outpatient department of family medicine. Our team excluded patients visiting for vaccination or a medical check-up from the study. Our team suggested student physicians try to take patients' focused history in 10 minutes.

On the day of videotaping, 4 family medicine professors, 2 residents and 1 to 4 student physicians watched the interview videos. We instructed students to watch the videos reminding them of pre-distributed 'interview skill evaluation criteria' (Supplement 1). After watching, discussion was held in a comfortable atmosphere. Discussion was composed of the student interviewer's opinions, other student physicians' opinions, and residents' and professors' feedback. Videotaping and evaluations of preliminary examinations were made on Monday or Tuesday. After Monday or Tuesday's first evaluation and feedback, discussion was held on desirable interview skills. On Thursday or Friday of the same week, we videotaped the second interviews. Our team gave feedback to the student physicians in the same manner.

Included videos for the study were recordings of both preliminary examinations before and after feedback before March 2011. We excluded subjects that videotaped only once. From March 2011, 3 family medicine residents watched and evaluated interview videos under the supervision of a professor.

We created the evaluation criteria based on the Arizona Clinical Interview Rating Scale (ACIRS) as a standardized tool. 15) From this ACIRS, we included 8 modified items (item 1 to 8 in Supplement 1) based on 4 professors' opinions, which were thought to be adequate for evaluating student interviewing skills in the outpatient department. We excluded 'listening to patients' concerns,' 'transitional statements,' 'documentation of data,' 'avoidance of repetitious questioning,' 'clarification,' 'relevance of questioning to the subsection,' 'end of the complete interview,' 'manner of interviewer,' and 'organization,' because of evaluation difficulty and excessively high level for medical school students. We added two more items from the 'SEGUE (set the stage, elicit information, give information, understand the patient's perspective, and end the encounter) framework' (item 9 and 10 in Supplement 1).¹⁶⁾ Consequently, our evaluation criteria consisted of 10 items. Items were used to evaluate student physicians' interview ability. Eight items were evaluated using the 5-point Likert scale. These items were 'therapeutic sequence,' 'type of question, 'facilitative behavior,' 'timeline,' 'pace of interview,' 'summary and verification,' 'avoidance of jargon,' and 'positive verbal reinforcement.' The other 2 items, 'maintaining a respectful tone' and 'another concerns,' consisted of 'yes' or 'no' questions. We also gave specific examples for each item score, to evaluate more objectively. In addition, we rated each interview generally by giving it 'general points.' Evaluators gave scores for general points on their first impression of interviews skills.

To make the research more objective, we did not change the 'evaluating board members' (3 evaluators and 1 professor). Also, these board members discussed and made rules for evaluation. They assessed item scores without knowing the identity of the student physicians and the order of the interview (before or after feedback). After evaluation, evaluators compared each other's scores item-by-item. If there was a discrepancy in scores of 2 points or more, they watched the videos again and discussed their scores further. Then, they scored the interview again. If the discrepancy in scores was less than 2 points, they submitted the final scores which two or more of them gave.

The Wilcoxon signed-rank test was used for comparing quantity of time consumed for interviews between before and after feedback. A paired t-test was used for analyzing item scores. An exact McNemar test was used for analyzing item scores of 'another concerns.'

RESULTS

1. Characteristics of the Study Subjects

Student participants of the research were composed of 22 males (66.7%) and 11 females (33.3%). Patients before feedback consisted of 16 males and 17 females. Patients after feedback were composed of 11 males and 22 females. The chief complaints of the patients were upper respiratory tract infection symptoms (37: before feedback 16, after feedback 21), abdominal pain and gastrointestinal symptoms (5: before 2, after 3), musculo-skeletal pain (4: before 2, after 2), and general body ache (2: before 1, after 1). Other symptoms included high blood pressure, weight loss, chest discomfort, chilling sensations, dizziness, headache, urticaria, dry mouth, fatigue, and hyperhydrosis.

2. Comparing Quantity of Time Consumed for Interview

Our team measured the quantity of time consumed for interviews. For the first interview videos, median consumed time was 380 seconds (range, 115 to 1,314 seconds). In the second interview videos, the median consumed time was 426 seconds (range, 156 to 840 seconds). There was no significant difference between the first and second interview videos (Table 1).

3. Comparing Item Scores between before and after Feedback

We compared item scores between before and after feedback. Of 10 items, 9 items showed higher average scores for the second

Table 1. The time taken for medical interview (n = 33)

	Median	Range	P-value*
Before intervention	380	115–1,314	0.67
After intervention	426	156-840	

^{*}By Wilcoxon signed-rank test.

interview video (after feedback) than the first video. The scores of 'general points' were also higher for the second interview video. Scores of 'maintaining a respectful tone' item were the same in the first as in the second because they were already high in the first.

There were significant score differences for the items, 'type of question,' 'timeline,' and 'positive verbal reinforcement.' The average scores of 8 items except 'general points' were graded higher in the second interview than in the first. The other items, 'therapeutic sequence,' 'facilitative behavior,' 'summary and verification, 'avoidance of jargon,' and 'another concerns,' did not show significant score differences statistically (Tables 2, 3).

DISCUSSION

There are many sets of medical interview skill checklists developed in foreign countries and in Korea. 17) However, there is no worldwide-standardized set of checklists. 18) Though seven essential sets of communication tasks were agreed upon by 21 leaders and representatives from major medical education and professional organizations, 19) physicians need to use a combination of several items derived from each set of different checklists because of the differences between situation, goals, and

Table 2. The scores of modified Arizona Clinical Interview Rating Scale

Items	Before intervention	After intervention	P-value
Therapeutic sequence	1.91 ± 0.38	1.97 ± 0.39	0.42
Type of question	2.36 ± 0.60	2.73 ± 0.72	0.01*
Facilitative behavior	2.82 ± 0.46	2.97 ± 0.59	0.20
Timeline	2.82 ± 0.68	3.18 ± 0.73	0.01*
Pacing of interview	2.82 ± 0.58	2.97 ± 0.73	0.28
Summarizing	2.73 ± 1.07	2.88 ± 0.99	0.51
Lack of jargon	4.00 ± 0.56	4.09 ± 0.46	0.45
Positive verbal reinforcement	2.24 ± 0.56	2.61 ± 0.90	0.04*
General [†]	2.82 ± 0.73	3.06 ± 0.79	0.13
Total [‡]	21.70 ± 2.62	23.39 ± 3.13	0.01*

Values are presented as mean ± SD.

resources.²⁰⁾ ACIRS was selected because it proved reliable and valid for accuracy both world-wide and domestically. 15,21) It has also been used continuously until now in many communication studies.22)

Based on the results of our research, teaching interview skills through videotapes seems to be effective for medical students. The scores of most items increased and some of them showed significant differences after education. This finding was similar to other studies which showed increased average ACIRS scores after education using paraprofessionals or standardized patients. 23,24) It also showed similarity with studies which showed increased ACIRS scores after introduction of new curriculum for improving communication skills.^{25,26)} Other research contained a frequent and wide range of interventions. But in our research, we educated students with just one feedback method using videotapes which recorded student physicians' preliminary examination with real patients. This is the primary difference between other research and our research.

In this result, extensive score differences presented in items 'type of question,' 'timeline,' and 'positive verbal reinforcement (Tables 2, 3).' These items are meant to reflect one's knowledge through speaking. But items that estimated small score differences were 'therapeutic sequence (accepting initial emotion),' 'facilitative behavior,' and 'pace of interview.' To improve these items, physicians need to improve their ability to handle emotions, behavioral changes, and knowledge. More feedback and education is needed to improve medical interview skills for 'emotion-handling' and 'behavioral change.'

Taking items into consideration more specifically, the authors believe that the item 'type of question' can be improved quickly after education. Starting information-gathering with open-ended questions, the core content of 'type of question,' is the skill which

Table 3. The analysis of 'another concern' item assessment (total 31 pairs*)

		After intervention	
		Yes	No
Before intervention	Yes	6	3
	No	9	13

P-value = 0.146 (by Exact McNemar test).

^{*}P-value < 0.05 by paired t-test. †The overall assessment score of each interview. [‡]The sum of all items except general score.

^{*}Two pairs were excluded for analysis because of missing values.

appeared in an early period of the interview. Thus, the students adopt educational feedback right after the education. For the item 'positive verbal reinforcement,' student physicians did not express their empathy to the patient in first interview. Most of the student physicians expressed their empathy in the second interview after education. However, most of the student physicians expressed their empathy just once at the early period of the interview. No one tried 'positive verbal reinforcement' such as empathy throughout the interview. For this behavior, more feedback is needed for student physicians.

Student physicians scored 1 or 2 points out of 5 on the item of 'therapeutic sequence.' They did not take emotional status of patients into consideration. They only asked about symptoms right after they listened to the patient's chief complaints. There was no difference in this item between before and after education. Student physicians scored 3 points or so for the item 'facilitative behavior.' They already used nodding and eye contact even in the video before education. However, they did not display facilitative behaviors (supportive behavior, relevant physical contact, etc.) that equaled to higher scores even in the second video. In the item 'pace of interview,' student physicians listened to patients carefully without interruption regardless of education. Sometimes, there was silence between patients and student physicians because of patient's personality, attitude, or physician's inability to ask a suitable question. However, we thought this problem could not be solved by just one session of feedback.

Most of the student physicians scored 4 or more on the item 'avoidance of jargon.' They already understood what was hard to understand and what was easy to understand for patients. The item 'maintaining a respectful tone' was also well followed by student physicians regardless of education. They may receive good evaluations because they were young student physicians. In oriental culture, younger people are taught to respect people who are older.

There were some limitations in this research. Firstly, we used evaluation criteria modified from ACIRS that was developed in a foreign country. However, this is not of great concern because items of the evaluation criteria were chosen by 4 professors who were adept at medical communication. Also, foreign physicians and Korean physicians share the same educational goals for patient-centered medical interviews. Most items which we used proved reliable and valid in our country. Secondly, our

team could not control patients' socio-demographic factors. However, this also is of little concern because the evaluation criteria of the interview were not for medical knowledge, but for communication skills which were common for all patients. We did not think that things like patient's age, gender, personality, place they live, wealth, chief complaint, and past medical history, had a significant effect. Thirdly, interview experience itself could improve the performance of student physicians without feedback. This limitation could definitively be solved in a study with a comparison group. Student physicians have already experienced clinical training in internal medicine, surgery, pediatrics, and obstetrics-gynecology. So we did not think that one more practical interview without tape-recording and feedback had a heavy effect on skill improvement. The small number of study subjects was another limitation of this research. Increasing sample size would make small differences significant. Therefore, a study with lots of subjects may be needed. Implementing the entire study for each student in one week was our last limitation. We could not assess the long term effects of a single intervention. The long term effects of the videotaping method need to be demonstrated in further research.

CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

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Supplement 1. Interview skill evaluation criteria

1) Therapeutic sequence

The interviewer does not take initial emotions of patient into consideration.	1
The interviewer is not used to treat initial emotions of patient.	2
The interviewer is concerned about patient's initial emotions. However, the interviewer tries to make therapeutic agreement without confirmation of consistency between patient's emotion and behavior.	3
The interviewer accepts patient's emotions like sadness, pain, and fear. The interviewer discusses therapeutic agreements with patient, but patient does not accept the whole agreements.	4
The interviewer accepts patient's emotions like sadness, pain, and fear. The interviewer makes therapeutic agreements with patient. The interviewer confirms that patient fully understands therapeutic agreements.	5
2) Type of question	
The interviewer asks lots of loaded questions such as why questions or multiple questions at a time.	1
	2
The interviewer fails to start interview with open question techniques. Uses mainly direct and semi-closed questions to take information.	3
The interviewer starts with open questioning techniques. The interview gradually moves from open to closed questions as each	
specific component of the content of the history is explored.	5
3) Facilitative behavior	
The interviewer does not make any encouraging or supportive behaviors and statements but negative and closed. Not tries to	1
make eye contact.	2
The interviewer sometimes makes encouraging behaviors and statements. Increased frequency of eye contact.	3
The interviewer makes encouraging behaviors and statements to communicate effectively. The interviewer uses eye contact	4
appropriately. Uses appropriate physical contacts when dealing with sensitive problems.	5
4) Timeline	
The interviewer gathers information related to present illness from patient without coherence.	1
	2
The interviewer does not gather most information related to chief complaints and present illness according to chronological sequence.	3
The interviewer gathers most information related to chief complaints and present illness according to chronological sequence	4
(progressing from the time of initial symptoms and signs to now orderly).	
5) Pace of interview	
The interview is conducted in such a manner that long pauses occur which break the continuity of the interview.	1
At times, the interview is marked with unnecessary pauses which temporarily break the continuity of the interview.	2
At times, the interview is marked with dimercessary pauses which temporarily break the continuity of the interview.	
The interviewer asks questions and/or takes notes in a manner which results in an interview that progresses smoothly with few unnecessary delays in the dialogue.	4 5

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Supplement 1. Continued

6) Summary and verification

At the end of a specific line of inquiry, the interviewer fails to summarize the data obtained.	1	
The interviewer sometimes summarizes the data at the end of a specific line of inquiry but fails to do it consistently.		
	3	
At the end of a specific line of inquiry (i.e., history of present illness, past medical history), the interviewer summarizes the data	4	
obtained in an effort to verify and/or clarify the information or as a precaution to assure that no important data were omitted.	5	
7) Avoidance of jargon		
Questions asked, as well as information provided to the patient during the interview, are confusing and difficult to understand;		
content contains numerous difficult medical terms and jargon.		
The interviewer sometimes uses medical jargon during the interview, failing spontaneously to define the medical terms for the patient unless specifically requested to do so by the patient.		
Questions asked, as well as information provided to the patient during the interview, are concise and easily understandable:		
content is free of difficult medical terms and jargon. If jargon is used the words are immediately defined for the patient.	5	
8) Rapport: positive verbal reinforcement		
The interviewer does not make a positive verbal reinforcement to the patient. He emphasizes negative aspects of patients rather	1	
than positive. Takes information without emotional approach.	2	
The interviewer does not give any feedbacks. He infrequently makes empathetic behaviors and verbal reinforcements.	3	
The interviewer frequently makes positive verbal reinforcements, feedbacks, and empathetic behaviors.		
	5	
9) Maintaining a respectful tone		
The interviewer maintains a respectful tone during whole interview. If any inappropriate situation happens, then check 'no.'		
	No	
10) Another concerns		
The interviewer asks if there is anything else patient would like to discuss. Even if it happened once while interview, then	Yes	
check 'yes.'	No	

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