

The Communication of Information from Physician to Patient: A Method for Increasing Patient Retention and Satisfaction

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Patients are more satisfied with their physicians when they are given and retain more information about their illnesses. When an experimental group of patients was asked to restate what they had been told, followed by physician feedback, retention of the information was 83.5 percent compared to 60.8 percent in a control group in which this technique was not used. Patient satisfaction was also higher in the experimental group.

There is a growing dissatisfaction with the quality of the doctor-patient relationship, a dissatisfaction reflected in the wide discussion of this problem in the lay press. One element of the doctor-patient relationship, the physician's communication of information to the patient, is a particularly troubled area. Several studies have shown that patients tend to be more dissatisfied with the information given to them by their doctors than with any other aspect of medical care.¹⁻³ Therefore, the physician's communication of information about illness to the patient can have important implications for the increasing problem of breakdowns in the doctor-patient relationship. In addition, transmission of information from physician to patient affects both the quality of care and the course of treatment by enhancing accuracy in history-taking and increasing the patient's compliance with therapeutic instructions.⁴⁻⁸

This paper seeks to add to other studies which have investigated the doctor-patient relationship in the area of the physician's communication of information to the patient. It is actually a combination of two studies, one an offshoot of the other. In the summer of 1974, a study was conducted which tested the hypothesis that patients with greater understanding and retention of the information the physician gave them would be more satisfied, overall, with the doctor-patient relationship, and that patients with less understanding and retention of the information would be less satisfied. It was found that patients with greater understanding and retention of the information they receive are indeed more satisfied with their physicians. It was also shown that patients are more satisfied with their physicians when they are given more information concerning their illnesses.

However, that study found, as have other studies,^{9,10} that outpatients forget about one third of the information their doctors tell them. This prompted in 1975 an investigation of a practical means of increasing patient retention of information and patient satisfaction. Patients in an experimental group

were asked by their physicians at the end of the appointment to restate the information given to them. They were then given appropriate feedback from the physicians concerning their accuracy in recounting what had been told to them. This matched experimental group was compared to the patients studied the previous year, and it was hypothesized that they would exhibit greater retention of information. It was further hypothesized that if patients in the experimental group retained more information, they would also be more satisfied.

Methodology

Both studies (1974 and 1975) were conducted in the Family Practice Clinic at the University of Utah Medical Center. Physicians participating were first, second, and third year residents in the Family Practice Residency Program. Fifty patients took part in the first study, and the resulting data were used as a control for the second study, in which another 50 matched experimental patients participated. Patients were selected who had not yet received professional information about the cause or care and management of their present illness.

Methodology in the two studies was similar. In the first, after the patient's permission and cooperation were con-

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firmed, the interviewer sat in a corner of the examination room and tape-recorded the entire verbal exchange during the appointment.

After the appointment, the patient was taken to an interviewing room separate but not far from the clinic. The patient was asked to respond candidly to a questionnaire (Table 1). The questionnaire consisted of nine questions dealing with different aspects of the doctor-patient relationship. The patient was given the opportunity to indicate, by means of Likert scale responses (with number 1 response reflecting most satisfaction and number 5 the least), how satisfied he/she felt about each aspect of the doctor-patient interaction.

The patient was then asked to recall the information which the physician had given him/her. During this time the tape recorder was turned on, with the patient's knowledge. When the patient's verbal spontaneity diminished, he/she was asked general open-ended questions about what the physician said concerning the explanation of the illness, further tests or visits needed, and treatment. These questions were facilitated by the fact that the interviewer had been present and had taken notes during the doctor-patient interaction. A special effort was made to give the patient the opportunity to relate all he/she actually remembered without leading the patient or putting words in his/her mouth. When this portion of the interview was completed, the patient was told that he/she would be contacted in the future by telephone to respond to a second questionnaire.

After completion of treatment or, in some long-term cases after treatment was well under way, the patient was telephoned and asked another similar satisfaction questionnaire consisting of six questions (Table 2). Again answers were made using the Likert scale.

The second satisfaction questionnaire provided a valuable means of evaluating the patient's satisfaction after completion (or progression) of treatment, in comparison to satisfaction at the onset of treatment. Also, it was hoped that the patient would be more at ease, if not at ease before, and would make frank comments regarding the perception of his/her health care.

Patient satisfaction was measured

separately as the sum of responses to questions on the first and then the second satisfaction questionnaire. If a very satisfied patient gave the number 1 response to all nine questions on the first satisfaction questionnaire, the score would be 9. On the other hand, if a dissatisfied patient gave the number 5 response to all nine questions, the score would be 45. Actual patient scores on the first questionnaire ranged between these two values. Patient responses to the second, follow-up questionnaire were analyzed using similar methods. A total satisfaction score was derived by combining the summed scores from both the first and second questionnaires.

The tapes of the appointment between the doctor and patient were coded for items of information the doctor gave the patient in three categories: (A) Explanation of illness, (B) Further investigations, tests, visits, and telephone communications, and (C) Regimen and treatment. Each item of information given under a specific category counted for one. No score was given for duplicate information repeated later in the conversation. The interview tape of the patient's recollections of information items from the doctor was coded using the same method. The patient's score was compared to the number of items of information that the physician had related in order to establish the percentage of information retained.

All data collected were key punched and sent to the University of Utah Computer Center for Mantel-Haenszel Chi Square analysis. This is a summary chi square test in which there is a 2×2 contingency table with one degree of freedom. It is valuable in testing when the rows and columns are orderable or on a continuous scale. It is then possible to test the association of a particular study factor with another factor.

The procedure in the second study was similar in all respects but one. As noted before, when the appointment came to a close, patients in the experimental group were asked by the residents to repeat in their own words the information which they had just been given. This gave the physician an opportunity to ensure that the patient understood the information received. The physician was then able to repeat the information which the patient had forgotten or misunderstood. During

this time, the patient was also asked if he/she had any questions. These methods of patient education, used consistently with each of the patients in the experimental group, were not used with members of the control group.

Results

In the first study (1974) the data supported the following conclusions.

Satisfaction and the Number of Items of Information given by the Physician

Initial patient satisfaction as measured on the first satisfaction questionnaire is increased when more total information in all three categories is given by the physician ($p = .03$). Satisfaction correlated most with the amount of information in Category C, which is concerned with treatment ($p < .01$). For the second satisfaction questionnaire, after completion or progression of treatment, this relation was no longer statistically significant. However, when the scores in the two questionnaires were combined to yield a total satisfaction score, there again was a significant relationship between patient satisfaction and amount of information given by the physician.

Satisfaction and the Percentage of Information Retained by the Patient

The separate patients' scores on the first and second satisfaction questionnaires were not significantly related to the percentage of information (A, B, C, and total information) retained by the patients. However, when the scores on the two questionnaires were combined to yield a total score, this score was related to the percentage of information (both A, B, C, and total information) retained by the patients. However, this relation was statistically significant ($p = .0472$) only when the total score (the combined score from the two satisfaction questionnaires) was compared to the percentage of information in Category B (Further investigations, tests, visits, and telephone communications) that was retained by the patients.

These results from the 1974 study prompted an investigation in a second study (1975) of a practical means of increasing patient retention of information and patient satisfaction. Subjects from the first study were used as a "control group" because they had

Table 1. Family Practice Clinic Patient Questionnaire

Name _____

Physician _____

Age _____

Sex _____

Education:

- 1. Some grammar school _____
- 2. Completed grammar school _____
- 3. Some Jr. high school _____
- 4. Completed Jr. high school _____
- 5. Some high school _____
- 6. Completed high school _____
- 7. Some college _____
- 8. Graduated from college _____
- 9. Graduate or professional education _____
- 10. High school and some other technical education _____
- 11. Other (please describe) _____

—1. Did your doctor explain your treatment to you so that you understood what was going to happen?

- 1. Very good explanation
- 2. Good explanation
- 3. Some explanation — neither good nor bad
- 4. Poor explanation
- 5. No explanation whatsoever

—2. Do you think that your doctor gave you as much information as you would have liked?

- 1. A great deal of information
- 2. More than I expected
- 3. Average amount of information
- 4. Less than I expected
- 5. No information

—3. Do you feel that you know enough now to take care of yourself at home?

- 1. Very much so
- 2. Pretty much so or better than usual
- 3. About average
- 4. Not very well
- 5. Not at all

—4. Did the doctor seem concerned in you as a person as well as a patient?

- 1. Very much concerned — showed a great deal of concern
- 2. Concerned
- 3. Neither concerned nor unconcerned
- 4. Not concerned
- 5. Very much unconcerned — showed no concern at all

—5. Did your doctor spend as much time with you as you would have liked?

- 1. A great deal of time
- 2. More time than I expected
- 3. Average amount of time
- 4. Less time than I expected
- 5. Very little time

—6. How well do you feel your doctor *listened* to what you had to say during your appointment with him?

- 1. Listened to everything I said
- 2. Listened most of the time to what I said
- 3. Listened to enough of what I said
- 4. Listened to little of what I said
- 5. Did not listen at all

—7. Did your doctor seem to *understand* your questions and what you had to say to him?

- 1. Understood everything
- 2. Understood most of the time
- 3. Understood enough
- 4. Understood little
- 5. Did not understand me at all

—8. How did you feel while you were being examined?

- 1. Was very relaxed
- 2. Was relaxed
- 3. Was O.K.
- 4. Was uncomfortable
- 5. Was very uncomfortable

—9. Do you have confidence in your doctor?

- 1. I am very confident
- 2. I am confident
- 3. My doctor probably knows what he is doing
- 4. I have some doubts
- 5. I have no confidence

Table 2. Questions Asked After Completion of Treatment

- 1. How do you feel about your doctor now that your treatment is over?
 1. Like him very much
 2. Like him
 3. He's O.K. (do not like nor dislike him)
 4. Dislike him
 5. Dislike him very much

- 2. Did the doctor seem concerned about you as a person as well as a patient?
 1. Very much concerned — showed a great deal of concern
 2. Concerned
 3. Neither concerned nor unconcerned
 4. Not concerned
 5. Very much unconcerned — showed no concern at all

- 3. How did your treatment turn out?
 1. Very well
 2. Well
 3. O.K.
 4. Not very well
 5. Badly

- 4. How confident are you in your doctor?
 1. Very confident
 2. Confident
 3. My doctor probably knows what he is doing
 4. I have some doubts
 5. No confidence

- 5. Do you feel that your doctor likes you?
 1. Likes me very much
 2. Likes me
 3. Neither likes nor dislikes me
 4. Dislikes me
 5. Dislikes me very much

- 6. Would you recommend your doctor to your friends?
 1. Definitely
 2. Very likely
 3. Maybe
 4. Not likely
 5. No

not received the consistent methods of patient education that were used with the "experimental group" of subjects in the second study.

Characteristics in which the Control and Experimental Groups did not Significantly Differ

As seen in Table 3, the control and experimental groups did not significantly differ in ratio of male to female patients, age, educational level, presenting illness, training level of physicians participating, or the amount of information given by the physician in all three categories.

Percentage of Information Retained by Control and Experimental Groups

Table 4 shows that the experimental group had significantly higher retention of information given by their physician in Category A, Category B, and Category C, analyzed separately, and total information of all three categories with $p < .10$. Patient retention of the total information in all three categories was increased from a median of 60.8 percent in the control group to 83.5 percent in the experimental group.

Satisfaction in the Control and Experimental Groups

Not only was patient retention increased in the experimental group, but patient satisfaction increased as well. Table 5 illustrates that patient satisfaction as measured on the first questionnaire was significantly higher in the experimental group. The patient scores on the second satisfaction questionnaire (after completion of treatment) were no longer significantly different for the two groups. However, when the scores in the two questionnaires were combined to yield a total satisfaction score, the experimental group was significantly more satisfied with the physicians.

Miscellaneous Findings

Comparison of the Effect on Patient Satisfaction of the Amount of Information Given by the Physician and the Percentage of Information that the Patient Retained

As stated above, it was found that patient satisfaction increases when more information is given. Also, pa-

tient satisfaction increases as the patient's *retention* of the information increases. It may be asked which of these two variables has the greater effect on patient satisfaction. To answer this question, a test for multiple correlation was performed. The multiple-correlation coefficient (R) was found to be .4010 and the coefficient of determination (R^2) was .1608. This means that 16.08 percent of the variability in total patient satisfaction is explained by the two independent variables, the total amount of information that the physician gave to the patient and the percentage of the information retained by the patient. To determine the individual contributions of the variables of the amount of information given and patient retention of information, the standardized regression coefficients were computed and found to be -.3476 with $p = .0012$ for the variable amount of information given and -.3453 with $p = .0012$ for the variable patient retention of information. The close similarity of these values for the two independent variables shows that their effect on the dependent variable, total patient satisfaction, is essentially the same.

The F - ratio is 8.52 with 2 and 89 degrees of freedom and the significance level of the F - ratio is .0004. This shows that the two independent variables significantly fit and explain the variability in the dependent variable, total patient satisfaction.

Satisfaction and the Sex of the Patient

In both studies, the sex of the patient was not related to satisfaction with the medical experience and the doctor-patient relationship. The sex of the patient also was not related to the percentage of information retained.

Satisfaction and the Educational Level of the Patient

In both studies, there was no statistically significant relation between the educational level of the patient and the scores on the first and second satisfaction questionnaires or on their combined total score. However, it was found that those with more education have significantly higher percentages of retention of the information given to them by their physicians than do those with less education.

The satisfaction scores on the first questionnaire which was administered immediately following the patient's first visit with the doctor for his/her present illness were positively and significantly related to the satisfaction scores on the second questionnaire, which was given by telephone following completion or progression of the patient's treatment. Mantel-Haenszel Chi Square = 4.04488, $p = .0443$, $R = .3067$.

Discussion

In the organization of medical services for ambulatory patients, the patient's needs as a person must not be overlooked in the desire to offer all that is considered necessary for adequate scientific care. Medical care should provide an environment which allows for the development and continuance of the doctor-patient relationship. The success of this relationship necessitates constant consideration of the patient's anxieties, expectations, and capability for understanding which are significant in determining his/her reaction to what happens. Only through communication and understanding can rapport in the doctor-patient relationship be developed and preserved and many of the causes of patient dissatisfaction be effectively controlled.

The present study sought to test these considerations in the setting of a family practice clinic. Patient satisfaction was used as a means of measuring the effectiveness of doctor-patient communication. It was found that as the amount of information given by the physician increased, patient satisfaction also increased. It was also found that the percentage of this information *retained* by the patient was of equal importance in its effect on patient satisfaction.

In the second study, the physician was able to reinforce important points and repeat information which the patient had forgotten or misunderstood. The patient was also given the opportunity to ask questions. The length of time of this doctor-patient interaction averaged no longer than five minutes, yet the results were significant. Patient retention of the total information in all three categories increased from a median of 60.8 percent in the control

Table 3. Characteristics in which the Control and Experimental Groups did not Significantly Differ

	Control Group	Experimental Group	Significance of Difference
Sex	9 men 41 women	11 men 39 women	NS
Patient Age			
Mean	30.8	28.7	NS
Median	27.0	25.8	
Patient Education*			
Mean	7.0	7.0	NS
Median	7.1	7.1	
Presenting Illness			NS
Training Level of Physicians Participating			NS
Number of Items of Information Doctor Gave Patient in Category A**			
Mean	6.6	5.8	NS
Median	6.0	5.5	
Number of Items of Information Doctor Gave Patient in Category B**			
Mean	2.6	2.3	NS
Median	2.2	1.9	
Number of Items of Information Doctor Gave Patient in Category C**			
Mean	4.3	3.4	NS
Median	3.5	3.0	
Total Number of Items of Information Doctor Gave Patient in All 3 categories, A, B, C			
Mean	13.4	11.5	NS
Median	12.5	10.8	

*7 corresponds to an educational level of "some college"

**Category A. Explanation of Illness
 Category B. Further Investigations, Tests, Visits, & Telephone Communications
 Category C. Regimen and Treatment

Table 4. Percentage of Information Retained by Control and Experimental Groups

	Control Group	Experimental Group	Significance of Difference
Patient Retention % of Category A Information			
Mean	58.0	75.9	p<.0001
Median	61.3	80.6	
Patient Retention % of Category B Information			
Mean	60.1	85.0	p<.0004
Median	58.6	100.0	
Patient Retention % of Category C Information			
Mean	63.2	87.2	p<.0001
Median	64.3	100.0	
Patient Retention % of Total Information in all 3 categories			
Mean	61.9	82.6	p<.0001
Median	60.8	83.5	

group to 83.5 percent in the experimental group. Also, patient satisfaction was significantly increased, again pointing to the relation between the amount of information retained by the patient and the patient's satisfaction. In view of these results, an investment of a short period at the close of the doctor-patient interaction in which similar techniques are consistently used may be valuable in other health care settings.

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Table 5. Satisfaction in the Control and Experimental Groups

	Control Group	Experimental Group	Significance of Difference
Patient Satisfaction as measured on the First Satisfaction Questionnaire*			
Mean	15.2	13.7	p<.05
Median	14.8	13.8	
Patient Satisfaction as measured on the Second Satisfaction Questionnaire*			
Mean	11.3	10.3	NS
Median	10.9	10.6	
Total Patient Satisfaction (First and Second Satisfaction Questionnaire Scores Combined)*			
Mean	27.0	24.5	p<.05
Median	26.2	24.1	

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*The lowest summed scores correspond to the highest satisfaction and the highest summed scores correspond to the lowest satisfaction.