

Effects of Health Education Methods on Appointment Breaking

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BROKEN appointments waste the health professional's time and make for inefficient use of medical facilities. More important, medical noncompliance can lead to irreversible health changes in the patient and the loss of health and life itself. Davis, in a recent review of the literature, reported that noncompliance rates range from 15 to 93 percent. He stated that at least a third of the patients in most studies failed to comply with their physicians' orders (1).

A critical question facing health practitioners is whether broken appointments can be reduced by improving health education programs. A recently published monograph is entirely comprised of studies of the effectiveness of health education programs (2). Results of such studies reported in the literature, however, are inconsistent. A considerable proportion suggest that the more health knowledge a person has, the more he will comply with medical instructions (3-5). An equally impressive number of studies do not support this view (6-8).

Broken Appointments and Glaucoma

In the detection and control of glaucoma, particularly, broken appointments pose difficulties, perhaps because chronic simple glaucoma in its early stages presents few, if any, symptoms. Thus, noncompliance with health recommendations may be even greater than that with other diseases.

Packers' report to the U.S. Senate's Special Committee on Health of the Elderly (9) contains this statement:

It has been our experience that early cases of glaucoma found by our screening program frequently do not stay under treatment as well as persons in later stages with symptoms. They become "dropouts" after a short period of treatment. In other words, they are not convinced, due to the fact that they have no symptoms, of the importance of remaining under treatment.

Packer, chairman of the division of preventive medicine, University of Tennessee, and a leader in glaucoma screening, also stated in a letter dated April 19, 1966: ". . . we estimate that approximately half of the diagnosed patients who are referred for treatment to our Eye Clinic are not under treatment a year later."

Shipsey has reported that "despite solid education and social service review of each case and 100 percent follow-up by the eye clinic on unkept appointments, an average of 15 patients

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each month are referred to social service as seriously resistant to follow-up efforts" (10).

The same experience was reported by A. D. Ruedemann, chairman of the department of ophthalmology, Wayne State University, School of Medicine, in a personal communication dated April 28, 1966. He disclosed that by the end of the first year's operation of the Detroit General Hospital's glaucoma screening survey, "nearly half of the patients screened as suspicious were lost to follow-up retesting."

Site of Study

The site for my study was the White Memorial Medical Center, a nonprofit, Seventh Day Adventist Church-related institution, located on the east side of Los Angeles. The surrounding area contains a large low-income Mexican-American population as well as other low-income ethnic groups.

The medical complex has more than 300 hospital beds and a large-sized outpatient facility. In 1966, this facility was awarded a 3-year Public Health Service grant to establish a program of glaucoma screening, detection, education, and followup. The hospital's inpatients were fairly representative of the population of the Greater Los Angeles area, but most of the outpatient clients were medically indigent and more representative of the minority groups living in areas surrounding the medical center.

Objectives and Hypothesis

The major objective of my research was to test the effects of selected health education methods on the appointment-breaking behavior of patients who were suspected of having glaucoma. The study also had two minor objectives: (a) a socioeconomic comparison of appointment-breakers with appointment-keepers and (b) an examination of the reasons the appointment-breakers gave for their behavior. I will report the results of this comparison and examination in future papers.

The following hypothesis, stated in the null form, was tested: There will be no statistically significant differences in the rates of broken appointments of glaucoma suspects exposed to each of four educational methods: a minimal information method, group 1; an intensive in-

formation method, group 2; a facilitating or problem-solving method, group 3; and a control, or no-information method, group 4.

Characteristics of Study

The study had the following characteristics:

1. It was a prospective experiment.
2. It dealt with observed behavior rather than with the self-reporting of patients suspected of having glaucoma on the basis of an initial screening.
3. The behavior observed was the proportion of patients with suspected glaucoma who broke their first-return and second-return appointments. Thus, appointment-breaking was the dependent variable.
4. Only the health education methods were manipulated. These methods were the independent variables.
5. Four different educational methods were tested, one of which was used as a control.
6. There was an additional method identified as the "traditional referral method," which was not considered to be educational. Suspects assigned to the group exposed to it were not exposed to any of the four educational methods.
7. The patients suspected of having glaucoma were randomly assigned to one of the four experimental groups. It was assumed that patients in all four groups would be similar in terms of demographic and other psychosocial variables, and statistical analysis verified this assumption.
8. One nurse presented all four educational methods, thus controlling the variable of the nurse's personality.

Procedures of Study

Free glaucoma screening tests were provided daily at the White Memorial Medical Center outpatient clinic and at monthly clinics conducted at two East Los Angeles centers operated by the Los Angeles Public Health Department.

Two kinds of clients participated in this research: (a) those who came purposely for the test as a result of information they had received through mass media and (b) those who came because of health problems not associated with their eyes who consented to take the glaucoma test while waiting for their medical examinations.



Figure 1. Tunnel vision

A single screening test was administered. Only clients whose intraocular tension measured 21 mm. of mercury or higher were classified as having suspected glaucoma and exposed to the educational methods. Screenees who were found, upon questioning, to have had a previous diagnosis of glaucoma were excluded from the study.

Each patient suspected of having glaucoma was randomly assigned to one of the four educational methods. All methods were presented by the same bilingual (English- and Spanish-speaking) nurse in a quiet room, uninterrupted by phone calls or other intrusions.

Two procedures were carried out with all four educational methods: (a) the nurse completed a socioeconomic information sheet, recording such data as the patient's age, marital status, formal schooling, occupation, and other related information—a procedure that required approximately 3 to 5 minutes; (b) at the end of the interview, a return appointment at a time acceptable to the patient was made.

In presenting the educational messages, 8½-by-11-inch illustrations (see examples in figures 1 and 2) were used, each illustration portraying one concept. To assure comprehension, the nurse asked the patient to explain each illustration in his own words. This phase of the presentation was not concluded until the nurse was satisfied that the patient understood the message.

Minimal information method. Group 1 patients were assigned to the minimal information

method and exposed to the following concepts (illustrated by pictures):

1. You have just taken a test for glaucoma.
2. From this test, it is not known for sure whether or not you have glaucoma.
3. If you have glaucoma and neglect it, you may end up seeing only straight ahead, like looking through a pipe or tunnel (fig. 1).
4. If neglect continues, blindness may result.
5. If, however, you seek treatment, then the condition can usually be controlled and blindness prevented.
6. Two more appointments are needed so that we can make a diagnosis.

7. The first-return appointment will be free; there will be a \$5 fee for the second examination.

The total time required for this minimal information method ranged from 8 to 11 minutes.

In-depth information method. Group 2 patients were assigned to the in-depth information method and received the same basic information as that provided to group 1, plus considerable detail about the effects of glaucoma, which were illustrated pictorially (fig. 2). The total time for this presentation ranged from 25 to 35 minutes.

Facilitating or problem-solving method. The group 3 patients, for whom the facilitating or problem-solving method was used, received the same basic information provided groups 1 and 2. In addition, the patient was interviewed in detail about his typical daily schedule—from rising to retiring—in order to find the appointment time which would conflict least with his daily schedule. After the client gave a detailed description of his day's activities, he and the nurse methodically discussed and worked out arrangements for transportation, babysitting, and ways of obtaining permission to be excused from work. Although transportation and babysitting services were not provided, each difficulty in these areas was discussed to enable the client to reach solutions ahead of time. This facilitating method required approximately 25 to 35 minutes, the same amount required for the in-depth information method.

No information. Clients in group 4, on the other hand, received no information other than the fact that their screening tests indicated the need for additional return appointments; no illustrations were used. With by far the briefest presentations, this method required 5 to 7 min-

utes, including the time used for completion of the socioeconomic information sheet and for giving a satisfactory appointment time.

Traditional referral method. The traditional referral method is so designated because it is currently used in most clinics and hospitals. It was used at the White Memorial Medical Center before inception of the study and, throughout the study period, for "overflow" patients.

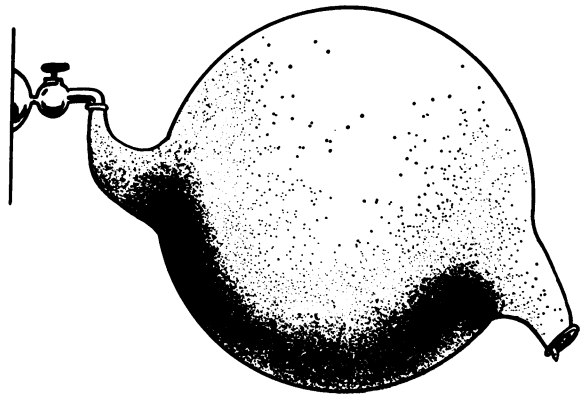
In contrast to the four educational methods, the traditional referral method was implemented by a secretary, not a nurse. When two clients with suspected glaucoma were waiting to be seen by the nurse, the next suspect (that is, the third suspect who was waiting) would be routinely taken to the secretary. She explained the results of the screening test and made the return appointment. Thus, the secretary dealt with the overflow patients, using the traditional referral method.

The secretary did not complete a socioeconomic information sheet on the suspect, did not present any formalized educational programs, and used no visual aids. With some clients, she went into considerable detail regarding the test's meaning and the importance of keeping return appointments. To others, she merely gave a return appointment. What the secretary presented depended upon how busy she was, the number of people waiting to see her, and a host of other factors. Like the nurse who implemented the educational methods, the secretary was a warm and friendly Mexican-American, bilingual, in her midtwenties. While the nurse implemented the educational methods in a quiet room free of intrusions, the secretary made the traditional referrals in a busy office with many interruptions. This traditional method required from 3 to 5 minutes of the secretary's time.

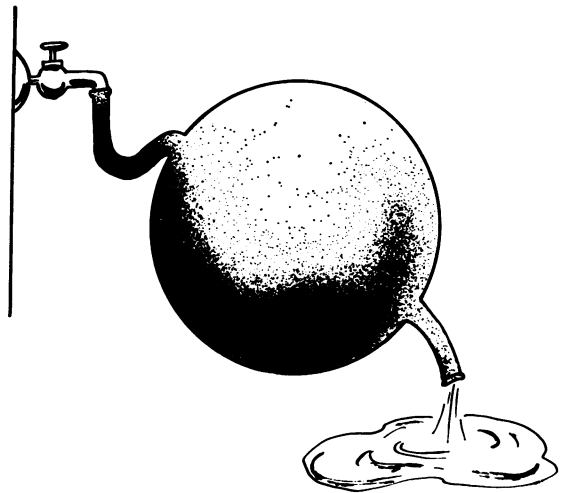
Return appointments. Two return appointments were necessary to complete a diagnosis. The first return visit, as indicated, was managed by the nurse who conducted the educational interview. Diagnostic procedures carried out during this visit included a visual field test for loss of peripheral vision and a tonography test, in which the outflow of fluid from the eyeball was graphed.

During this first-return appointment it was not unusual for the patient to question the nurse about glaucoma. The nurse, however, had been

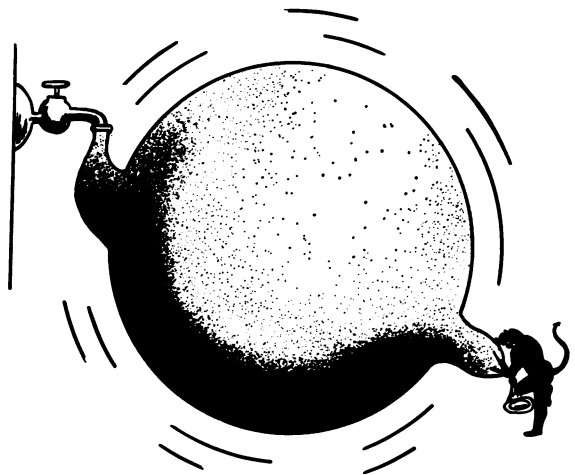
Figure 2. Effect of glaucoma on eyeball



Eyeball may be compared to a balloon



In normal eyeball, fluid comes in and goes out



In glaucoma, fluid comes in, but little goes out

instructed to impart no information in addition to that permitted by the educational method designated for the client's group. When patients persisted in questioning, the nurse suggested that they write their questions down and save them for their second-return appointment, when they would be examined by a physician. This procedure worked in every instance.

The second-return appointment of the patient was with the physician. Like the first, it was set up originally so that it would take place after a 2-week interval. Sometimes, however, because of an overload of patients at the clinic, the waiting period was longer. Nevertheless, there were no significant differences in waiting periods among patients assigned to the different educational methods.

The diagnostic procedures carried out by the physician during the second-return appointment included applanometer examinations, which permitted a more exact reading of the intraocular pressure than the initial screening procedure, and an examination of the retina. It was during this second-return appointment that the patient was given an opportunity to ask any questions he had written down during the first-return appointment. From the results of the two return appointments, the physician was usually able to make a diagnosis. With borderline results, however, the client was advised to return for an additional examination.

The study concluded with the second-return appointment. Therefore, in terms of the research design, it did not matter how much health information the physician imparted.

Analyses. To test the effectiveness of the four educational methods on the rates of broken appointments among the patients suspected of having glaucoma, two analyses were done. The first, or initial analysis, covered the 25 clients who broke either their first-return or second-return appointments at the White Memorial Medical Center. The appointment-keepers in this instance numbered 161 persons.

The secondary analysis covered the 15 clients who broke either their first-return or second-return appointment at the center and did not voluntarily seek care elsewhere. Interviews with the original 25 appointment-breakers revealed that 10 had sought care at some other approved

source of care. The clients' statements were verified by inquiry to the sources of care they named.

For the secondary analysis, these 10 "transfer" clients are included with the 161 appointment-keepers.

Results of Initial Analysis

Initial analysis of broken appointment rates among the groups of patients exposed to the four different educational methods revealed no significant differences among the groups for total broken appointments (that is, first-return and second-return appointments), for first-return appointments alone, or for second-return appointments alone (table 1). The total broken appointment rate for patients in group 1 was 16.4 percent, 13.3 percent for those in

Table 1. Initial analysis of appointments broken by patients suspected of having glaucoma who were exposed to an educational method

Educational method	Number of patients	Appointments broken	
		Number	Percent
1st- and 2d-return appointments ¹			
Total.....	186	25	13.4
1.....	55	9	16.4
2.....	49	6	12.3
3.....	52	7	13.5
4.....	30	3	10.0
1st-return appointments ²			
Total.....	186	13	7.0
1.....	55	4	7.3
2.....	49	3	6.1
3.....	52	5	9.6
4.....	30	1	3.3
2d-return appointments ³			
Total.....	168	12	7.1
1.....	49	5	10.2
2.....	44	3	6.8
3.....	47	2	4.3
4.....	28	2	7.1

¹ Chi-square (3 degrees of freedom) = 0.77 (difference not significant).

² Chi-square (3 degrees of freedom) = 1.22 (difference not significant).

³ Chi-square (3 degrees of freedom) = 1.23 (difference not significant).

group 2, 13.5 percent for those in group 3, and 10 percent for those in group 4.

First-return appointments. The results of initial analysis of the first-return appointments (table 1) warrant special attention. The educational messages had been given before these appointments. Moreover, the rates for broken second-return appointments were likely influenced by the diagnostic tests the nurse administered during the first-return appointments. Therefore we may assume that the rates for broken first-return appointments are a more valid index of the effectiveness of the various educational methods than are the rates for broken second-return appointments.

Second-return appointments. Thirteen of the 186 patients in the original sample broke their first-return appointments and were thus out of the study. An additional five patients informed the staff of the White Memorial Medical Center that they were obtaining medical care elsewhere (this information was confirmed), and they, too, were eliminated from the study. Thus, 168 patients were eligible to return for a second appointment.

Results of Secondary Analysis

In the secondary analysis, as in the initial analysis, I found no significant differences in the rate of broken appointments among patients exposed to the four educational methods (table 2). The total broken appointment rate (for first-return and second-return appointments) was 10.9 percent for group 1, 12.3 percent for group 2, 1.9 percent for group 3, and 6.7 percent for group 4.

Of the 186 patients in the original sample, 172 were eligible for the second-return appointment. Nine patients who broke their first-return appointments and five patients who informed the staff of the medical center of their intention to seek outside care were ineligible.

Results With Traditional Referrals

When the patients exposed to the four educational methods were compared with those exposed to the traditional referral method, a statistically significant difference at the 0.025 level was found in the percentage of broken first-return and second-return appointments. When the first-return appointments alone were

studied, an even greater statistical difference appeared, which was significant at the 0.005 level (table 3). When the second-return appointments were studied, however, no significant differences emerged between the four educational groups and the traditional referral group (table 3). Of these second-return appointments, 168 were made by use of an educational method and 98 by the traditional referral method. Patients who broke first-return appointments were excluded.

An important question is: Why was there so large a difference in broken first-return appointment rates between the educational groups and the traditional referral group when there were no significant differences between the

Table 2. Secondary analysis of appointments broken by patients suspected of having glaucoma who were exposed to an educational method and did not voluntarily seek further diagnostic care at any approved source

Educational method	Number of patients	Appointments broken	
		Number	Percent
1st- and 2d-return appointments ¹			
Total.....	186	15	8.1
1.....	55	6	10.9
2.....	49	6	12.3
3.....	52	1	1.9
4.....	30	2	6.7
1st-return appointments ²			
Total.....	186	9	4.8
1.....	55	4	7.3
2.....	49	3	6.1
3.....	52	1	1.9
4.....	30	1	3.3
2d-return appointments ³			
Total.....	172	6	3.5
1.....	49	2	4.1
2.....	44	3	6.8
3.....	51	0	0
4.....	28	1	3.6

¹ Chi-square (3 degrees of freedom)=2.78 (difference not significant).

² Chi-square (3 degrees of freedom)=2.00 (difference not significant).

³ Chi-square (3 degrees of freedom)=3.33 (difference not significant).

Table 3. Comparison of effectiveness of four educational methods with that of traditional referral method in respect to broken appointments

Method	Number of patients	Appointments broken	
		Number	Percent
		1st- and 2d-return appointments ¹	
Educational.....	186	25	13.4
Traditional referral....	127	31	24.4
		1st-return appointments ²	
Educational.....	186	13	7.0
Traditional referral....	127	22	17.3
		2d-return appointments ³	
Educational.....	168	12	7.1
Traditional referral....	98	9	9.2

¹ Chi-square (1 degree of freedom) = 6.18; $P=0.01$ at 0.025 level.

² Chi-square (1 degree of freedom) = 8.11; $P=0.005$.

³ Chi-square (1 degree of freedom) = 0.36 (difference not significant).

educational groups and the traditional referral group for the second-return appointment?

Several factors were undoubtedly involved. Clients exposed to one of the educational methods were provided with a special kind of relationship:

1. They were interviewed in a quiet room undisturbed by telephone or other intrusions and received the complete and undivided attention of the nurse.

2. There was approximately 3 to 5 minutes of close, personalized contact while the nurse completed a socioeconomic information sheet with each client.

3. The nurse was dressed in a white cap and uniform. The traditional referral method, on the other hand, was implemented by a secretary in street clothes, in an office frequently occupied by one or more persons and often disturbed by telephone calls and other interruptions.

"Tender loving care." The personal interest, attention, and the "tender loving care" given to the clients in the educational groups seems to have accounted for their lower rates of broken appointments. Christman (11) and Devereaux (12) have stressed the importance of these characteristics in the nurse-patient rela-

tionship. Rushing (13) and Schulman (14) have pointed out that tenderness is a key component of the nurse's role as mother surrogate and that it is this role which is so important in creating effective nurse-patient interaction.

Even the demographic data were elicited in so gentle a manner as to suggest to the patient that the nurse and the medical center were indeed interested in him. The importance of this interest and tenderness cannot be minimized. In a study of a rheumatic fever program, Elling's results suggest that the mothers who complied more consistently with medical recommendations had a higher "reflexive self-concept," that is, they believed that the clinic physicians had evaluated them and approved of them (15).

Research by Roberts and co-workers revealed results strikingly similar to those of my study (16). These authors evaluated the effects of two planned educational methods in inducing Navaho mothers to seek infant and post partum care. In the first method, tape-recorded messages were used; in the second, an Indian health aide personally gave an illustrated talk to the mothers. Both methods had the same educational content. When the responses of the groups to which these presentations were made were compared with those of a control group to whom no planned presentations were made, both experimental groups showed significantly higher response rates in seeking followup care than the group which was not exposed to the planned presentation.

Moreover, there were no significant differences in response rates between the groups exposed to the two educational approaches. Roberts and co-workers expressed the belief that the lack of significant differences was due to the attention shown the mothers in both educational approaches. Even with the impersonal tape-recorded messages, the aide was involved with the mother in teaching her how to use the tape-recording machine. "This may have aroused interest, a feeling of others' interest in her [the mother], and a kind of involvement such as was created by the continuing personal contact throughout the primary presentation" (16).

In a completely different investigation, known in the literature of business administration as

the classic Hawthorne study, the most important factor in increasing the production of female factory workers was shown to be the workers' belief that management was interested in them (17).

Nurse's uniform. The fact that the nurse wore a cap and uniform while the secretary using the traditional referral method wore street clothes may have influenced the response rates in my study. Possibly the nurse's uniform afforded a certain mystique or authority which affected the clients exposed to the four educational approaches. Unfortunately, this study did not control for the effect of the uniform. A number of other studies, however, suggest that the nurse's uniform may have no significant effect on the nurse-patient relationship (18-20). In fact, the trend among public health nurses who make home visits to counsel or educate is towards the use of street clothes and away from the uniform.

Time Spent With Client

The amount of time the nurse or the secretary spends with patients should be examined as a possible important variable in influencing broken appointment rates. Do patients with whom the nurse spends more time break fewer appointments than those with whom she spends less time?

This variable was also not controlled in my study. The clients, however, in group 1, the minimal information group, spent approximately 8 to 11 minutes with the nurse; those in group 2, the in-depth information group, had approximately 25 to 35 minutes of contact with the nurse; those in group 3, the facilitating or problem-solving group, also had approximately 25 to 35 minutes; and those in group 4, the no-information, or control, group averaged 5 to 7 minutes of contact.

Table 4 shows the results of comparisons, in both the initial and secondary analysis, of the mean number of minutes the nurse spent with breakers and keepers of the combined first-return and second-return appointments. This table also shows the results of comparing, in the secondary analysis, the mean number of minutes that the nurse spent with the two groups during the first-return appointments alone. None of the differences between the breakers and keepers of

appointments were found to be statistically significant.

The amount of time the nurse spent with each patient in the four educational groups compared with the time the secretary spent in the traditional referral method is also of interest. The nurse spent from 5 to 35 minutes compared with 2 to 5 minutes spent by the secretary. This difference suggests that the time variable may affect a patient's compliance with suggestions for medical care. Nevertheless, the patients in group 4 had a considerably shorter amount of contact with the nurse than patients in groups 2 and 3 and yet did not show significantly different rates of broken appointments.

Possibly a mix of a certain quantity of relationship in terms of minutes and a certain quality of relationship in terms of interaction induces patients to return. The quantity of the relationship, however, seems to be less crucial than the quality.

Conclusions and Recommendations

To generalize from the results of this study and apply them to different populations and to different medical conditions would be dangerous. The following conclusions and recommendations are presented most cautiously.

There is a widespread belief that health education will effect greater compliance on the part of the client and that the more knowledgeable the client is about his medical condition, the more likely he will be to comply with a prescribed regimen. When, however, I studied one index of compliance, namely, how well patients kept diagnostic appointments, the evidence from 186 clients suspected of having glaucoma did not appear to support this belief.

My study of these clients showed that what is important in reducing broken appointments is not what the client is taught or told, but the manner in which the information is conveyed. Results of this study and of others in the literature suggest that the client needs to feel that the staff of the medical facility is concerned with his welfare.

Clearly, the optimum situation for all organizations providing health care would be one in which all staff members evidenced an interest in their clients. Through proper selection of staff and continuous inservice training, this at-

Table 4. Comparison of mean number of minutes the nurse spent with appointment-breakers and appointment-keepers

Group	Number of persons	Mean minutes with nurse	Standard deviation
1st- and 2d-return appointments (initial analysis) ¹			
Breakers-----	25	18.4	9.895
Keepers-----	161	18.8	10.823
1st- and 2d-return appointments (secondary analysis) ²			
Breakers-----	15	16.0	7.93
Keepers-----	³ 171	19.0	10.87
1st-return appointment (secondary analysis) ⁴			
Breakers-----	9	16.38	8.40
Keepers-----	177	19.30	10.52

¹ $t = -0.178$ (no significant difference between breakers and keepers).

² $t = -1.02$ (no significant difference between breakers and keepers).

³ Includes 10 patients who transferred to other facilities for medical care.

⁴ $t = -0.82$ (no significant difference between breakers and keepers).

tribute of "caring" can be developed. In view of present-day staff shortages and the hurried pace found in most facilities, an implication of the current study is that at least one person should be assigned the specific responsibility of demonstrating this special interest in the client. Perhaps that person should play the role Rushing has described as that of "mother surrogate" (13).

The staff member selected for this role need not be a highly trained, highly paid professional. Especially when there is a need for relating to members of lower socioeconomic groups, the amount of medical and scientific knowledge required is minimal. A licensed vocational nurse, a nurse's aide, a secretary, a volunteer, or a worker indigenous to the area might well qualify (21-23). It is the personality characteristics of warmth, gentleness, and the ability to communicate with clients that appear to be essential in establishing the desired client-staff relationship.

In-depth education of the patient is, of course, still needed. And once the patient has

been induced by personal interest and tender loving care to return for further appointments, he will be available for that additional education and training.

Summary

No significant differences were found in the rates of broken appointments among patients suspected of having glaucoma who were exposed to four different health education methods designed to induce patients to return for appointments so that a diagnosis could be established. The four methods, however, were associated with significantly lower rates of broken appointments when contrasted with the rates for clients exposed to the traditional referral method.

The amount of time the nurse spent with clients in the educational sessions was not significantly associated with the rates of broken appointments. For example, the groups exposed to educational methods 2 and 3 (each requiring approximately 30 minutes) yielded results that were not significantly different from those for clients exposed to method 1 (which averaged 8 to 11 minutes of the nurse's time) or to method 4 (which averaged 5 to 7 minutes).

The greater effectiveness of the four educational methods over the traditional referral method was probably due to the unhurried, personalized attention and "tender loving care" with which all four educational methods were implemented.

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Tearsheet Requests

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ERRATUM

In the article by N.R.E. Fendall and John Gill entitled "Establishing Family Planning Services in Kenya," appearing in the February 1970 issue of *Public Health Reports*, page 135, two figures in the tabulation of *Clinics* are incorrect. The correct tabulation follows:

<i>Clinics</i>	<i>Number</i>
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