PHYSICIAN INTERVENTION IN COMPLIANCE WITH THERAPEUTIC DIETS

by

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(ABSTRACT)

The purpose of this study was to examine the premise that a stimulus to the physician in the form of a written reminder would aid the physician in influencing his patient in compliance with a therapeutic diet. Compliance outcome related to the physician-patient relationship and the quality and skills displayed by the dietitian were analyzed.

A short questionnaire was designed to obtain information on types of diet and whether the physician had mentioned diet during a visit to his office. Likert-type responses to attitude statements related to physician-patient relationship, compliance, skills and knowledge of the dietitian, and patient understanding of reason for dietary restrictions were included. The questionnaire was mailed to previously hospitalized patients who had been instructed on a therapeutic diet. A random sample of their physicians were mailed letters to remind them of their patients' diet.

The results indicated that there was a higher rate of initiation

of discussion of diet with the patient among physicians whose patients were on simple diet modification when the physician had received a stimulus. Physician inquiry concerning the patient's diet was identical whether physicians had received a stimulus or not among patients with complex diet modification. The physician-patient relationship was perceived more positively by the complex diet group whose physician had received a stimulus than by the complex diet group whose physicians had not received the stimulus.

The dietitian was perceived as being more knowledgeable and skilled by the patients with complex diets than by patients with simple diet modifications.

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CHAPTER I

INTRODUCTION

Patient compliance has been the topic of discussion by many writers in the field of health. Even so, in dealing with health regimens, patient compliance has been poor. Studies concerning patient compliance have been conducted, but only a small portion of the research pertains specifically to diet regimens. Among the studies reported, little emphasis has been placed on the physician-patient relationship and dietary compliance.

During hospitalization, a patient may have several contacts with the dietitian. However, it might be for only one consultation in which the dietitian explains and discusses the special dietary restrictions ordered by the physician. In most hospital situations, the patient does not return for follow-up nutrition counseling unless the patient is rehospitalized for some other reason. The physician, however, does have the opportunity to evaluate the progress of the patient in following the specified diet. If the physician was to exhibit an interest in patient compliance to dietary restrictions, would this be a positive force in the patient's compliance to his diet?

The purpose of this study was to examine the premise that a stimulus to the physician in the form of a written reminder would aid the physician in influencing his patient in compliance with a

therapeutic diet. The objectives of this study were: (a) to examine the effect of the physician-patient relationship in patient compliance with a therapeutic diet. And (b) to examine compliance outcome by the quality and skills displayed by the dietitian, as perceived by the patient.

Compliance was defined as the extent to which a person's behavior (in terms of taking medications, following diets, or executing lifestyle changes) coincides with medical or health advice.[1]

A therapeutic diet was defined as the customary allowance of food or drink taken by any person from day to day, particularly one especially planned to meet specific requirements of the individual in the curative process, and including or excluding certain items of food.[2]

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[1]R. Brian Haynes, et al., Compliance in Health Care (Baltimore: The John Hopkins University Press, 1979), pp. 1-2.

[2]L.R.C. Agnew, et al. [ed.], Dorland's Illustrated Medical Dictionary (Philadelphia: W. B. Saunders Company, 1965).

CHAPTER II

REVIEW OF LITERATURE

Most of the literature dealing with compliance was written in the 1970's. Many areas of compliance have been explored in the realm of health care, but no study directly related to physician-patient relationships in dietary compliance was available. Therefore, this review of literature explored concepts relating to patient compliance in other health regimens in which the physician-patient relationship can intervene to have a positive influence.

Physician-Patient Relationship

The most consistent variable found to be associated with compliance with health care regimens has been the patient-physician relationship. Compliance was associated with patients who were in agreement with the physician, who attempted to seek the physician's opinion, or who experienced a release of tension as a result of consultation. Noncompliance was associated with cases where the patient perceived the physician as very formal or rejecting, or where the physician requested information without offering the patient a rationale for the questioning.[3]

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[3]J. Rafael Toledo, Howard Hughes, and Joe Sims, "Management of Non-Compliance to Medical Regimen: A Suggested Methodological Approach," International Journal of Health Education, 22:234, 1979.

Although numerous studies either have measured levels of noncompliance or have attempted to understand the essential elements of patient-physician interaction, they do not indicate how compliance may be increased. Bernarde and Mayerson[4] suggested the strategy of appropriate negotiation. This is a process by which two active and equal participants negotiate to obtain their respective goals. These authors suggested that health professionals other than the physician are not the answer for increasing patient compliance. Securing and maintaining compliance are essential parts of patient management and should not be assigned to others.[5]

Schmidt has suggested the development of a behavioral program. Critical to patient compliance is routine monitoring by the physician. Monitoring is best viewed as a way not of catching the patient but of ascertaining whether the program is working, and if it is not, of understanding why and correcting the problem. If compliance is treated as a problem which both physician and patient must address, the chance of success is greatly increased.[6]

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[4]Melvin A. Bernarde and Evelyn Wilde Mayerson, "Patient-Physician Negotiation," JAMA, 239:1413, April 3, 1978.

[5]Bernarde, p. 1413.

[6]James P. Schmidt, "A Behavioral Approach to Patient Compliance," Postgraduate Medicine, 65:221, May 1979.

Patterns of communication which deviate from the normative doctor-patient relationship will be associated with patients' failure to comply with doctors' advice. Such deviations include circumstances where tension in the interaction is not released, and where the physician is formal, rejecting, controlling, disagrees completely with the patient, or interviews the patient at length without subsequent feedback.[7]

The results of an investigation by Falvo, et al.,[8] showed a statistically significant relationship between two aspects of physician behavior and patient compliance. The more patients perceived the physician as giving explanations and showing concern, the better was patient compliance. Findings from this study did not indicate that differences in cooperation were a function of the length of the patient-physician relationship. The patient's status as a new or regular patient of the physician made little difference.

Physician behavior and its relationship to patient compliance have been a little-studied variable, possibly because specific physician behavior that contributes to patient compliance is difficult to define

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[7]Marshall H. Becker and Lois a Maiman, "Sociobehavioral Determinants of Compliance with Health and Medical Care Recommendations," Medical Care, 13:18-19, January, 1975.

[8]Donna Falvo, et al., "Relationship of Physician Behavior to Patient Compliance," Patient Counselling and Health Education, 4:185-188, Winter, 1980.

and measure. Hooper, et al.,[9] examined this aspect of the relationship but in reverse. They documented how a patient's attributes or characteristics directly affected a physician's behavior. The results of their study indicated that physician behavior varied with the sex, age, appearance, and ethnicity of the patient.

The lack of congruity between what the patient thinks he is supposed to do and what the physician thinks the patient is doing has most often been overlooked and the blame pointed out as patient noncompliance. In a study by Hulka, et al.,[10] neither characteristics of patients nor the severity of disease were influential in determining the extent of medication errors. Good communication of instructions and information from physician to patient was associated with low levels of medication errors, scheduling errors, and other behaviors related to the patient's use of medicine.

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[9]Elizabeth M. Hooper, et al., "Patient Characteristics That Influence Physician Behavior," Medical Care, 20:630-637, June 1982.

[10]Barbara S. Hulka, et al., "Communication, Compliance, and Concordance between Physicians and Patients with Prescribed Medications," AJPH, 66:847-853, September, 1976.

Hershey, et al.,[11] analyzed self-reported medication-taking compliance behavior using an expanded version of the health belief model which measures the variables predicting preventive health behavior. This study indicated that dependence on the health providers was not independently predictive of compliance. But the providers in this study were nurses, not physicians. Whether compliance would have been greater if physicians had been the health providers is not known.

Specific provider and patient behaviors within segments of the physician-patient encounter (history, physical examination, and conclusion) were shown to be related to encounter outcomes of knowledge, compliance, and satisfaction. Carter, et al.,[12] concluded that several relationships taken together indicate that teaching by the physician in the concluding segment of encounters may be important in overall compliance.

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[11]John C. Hershey, et al., "Patient Compliance with Antihypertensive Medication," AJPH, 70:1081-1088, October, 1980.

[12]William B. Carter, et al., "Outcome-Based Doctor-Patient Interaction Analysis," Medical Care, 20:550-566, June 1982.

From the findings in the studies reported, it appears that the most promising site for intervention is in the physician-patient interaction. Viewing compliance as a property of the transaction between the physician as the expert and the patient, it is appropriate to view the responsibility for establishing compliance as shared between physician and patient.[13]

Intervention of Dietitian

Discrepancies in results have been found in the literature related to nutritional compliance and the literature dealing with the physician-patient relationship to compliance. The following information is based on articles and studies from a nutritional counseling standpoint.

The traditional medical approach to dietary problems has been diagnosis, prescription for education in new eating habits, and referral to a dietitian who can provide this service. For example, traditional instruction and dietary counseling are forms of direct manipulation of behavior and of great importance in a weight control program. However, if the individual has no idea of why he needs to lose weight his motivation will be rather low. Instruction and dietary

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[13]George C. Stone, "Patient Compliance and the Role of the Expert," Journal of Social Issues, 35;34-57, January, 1979.

counseling set the stage for behavioral change, but rarely result in change when used alone.[14] In addition, the changing of a behavior will more likely also result in attitude change.[15]

Generally the results of both long and short term studies of compliance with weight reduction regimens are found to be discouraging Garb and Stunkard[16] studied the group Take Off Pounds Sensibly (TOPS) at two different times, two years apart. Attrition rates were very high -- 47% at one year and 70% at two. Within individual TOPS chapters there was a very large variance in mean weight loss. The final analysis was that short term members lost small amounts of weight and longer term members lost larger amounts of weight with slow regain.

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[14]James Ferguson, "Dietitian as Behavior-Change Agents," JADA, 73:234, September, 1978.

[15]Richard I. Evans and Yolanda Hall, "Social-Psychologic Perspective in Motivating Changes in Eating Behavior," JADA, 72:380-382, April, 1978.

[16]James R. Garb and Albert Stunkard, "Effectiveness of a Self-Help Group in Obesity Control," Archives of Internal Medicine, 134:716-719, October, 1974.

Sohar and Sneh[17] examined 27 obese patients 14 years after a successful dieting course. In this study 19 of the 27 patients were back to weight almost identical to their weights prior to the reduction diet. Results indicated that neither the degree of obesity nor the initial success of weight loss were related to the final assessment 14 years later.

Zizzerblatt and Wilbur[18] stressed the greater importance of a patient's learning a general approach to solving dietary problems than learning any particular behavioral change technique. Therefore, lasting change, the goal of all nutritional counseling, is most likely to result when the patient assumes the responsibility and skills for managing his own dietary habits.

One pilot study dealt with the concept of social influence in reference to changes in one person or a collection of persons through the action of dietitians.[19] Dietitians serve as an example of planned influence in a face-to-face interaction. The findings of this study

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[17]Ezra Sohar and Ephraim Sneh, "Follow-Up of Obese Patients: 14 Years After a Successful Reducing Diet," American Journal of Clinical Nutrition, 26:845-848, 1973.

[18]Steven M. Zizzerblatt and Curtis S. Wilbur, "Dietary Counseling: Some Realistic Expectations and Guidelines," JADA, 70:595, June, 1977.

[19]Karen Glanz, "Dietitians' Effectiveness and Patient Compliance With Dietary Regimens," JADA, 75:635-636, December, 1979.

led to the contention that the practitioners's orientation to social influences is important for the interaction and also impact on subsequent behavior.

A Finnish study conducted by Pietinen, et al.,[20] examined the home use of regular salt and salt substitute and incorporated nutrition counseling. The results indicate that the home use of the salt substitute alone, or counseling for changing food habits alone, or a combination of the two was not effective in reducing sodium intake to a degree detectable by the study methods.

Patient Education

Patient education has the potential of improving compliance with physician's orders. Many patients simply do not follow their doctors' orders. Much of the responsibility for poor compliance relates to a lack of complete understanding by the patient of what should be done and why. Most patients need full and thorough explanations of the procedures they are to follow, both verbally and in writing. Research does suggest that patient education programs increase the rate of compliance.[21]

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[20]Pirjo Pietinen, et al., "Sodium Intake Reduction in Volunteer Families by Using a Salt Substitute and Nutrition Counseling," Annals of Nutrition and Metabolism, 25:371-380, 1981.

[21]"Patient Education Programs' Time Has Come, MDs Should Lead," Michigan Medicine, 78:665, November, 1979.

However, in a study conducted by Sackett, et al.,[22] the opposite conclusion was drawn. This was a two fold study in which 230 steelworkers with hypertension were randomly allocated to see either their own family doctors outside of working hours or industrial physicians during work shifts. The same men were randomly selected to receive or not receive an education program aimed at instructing them about hypertension and its treatment. Individual compliance rates bore no relation to knowledge about hypertension either at entry to the study or after six months of instruction. Those who received health information did no better than those who did not, in terms of either compliance or blood pressure control. Even so, this does not mean that all health education is necessarily worthless. It still remains the ethical obligation of clinicians to inform the patient -- patients cannot comply with a regimen unless they understand the instructions.

Buller[23] examined the importance of the educational techniques that

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[22]David L. Sackett, et al., "Randomised Clinical Trial of Strategies for Improving Medication Compliance in Primary Hypertension," The Lancet, 1:1206-1207, May 31, 1975.

[23]Ann Cravens Buller, "Improving Dietary Education for Patients with Hyperlipidemia," JADA, 72:277-281, March, 1978.

most effectively bring about attitudinal and behavioral changes in regards to dietary habits in persons with hyperlipoproteinemia. The author developed self-instructional booklets. The booklets were used alone or in combination with a telephone consultation. Questionnaire replies suggested that the combination of telephone consultation and the instructional aid was significantly related to a greater change in attitude than the change related to the use of instructional aid alone.

While a great deal of time, money, and effort has been spent to develop sophisticated patient education programs, results suggest that education alone is not enough to change patient behavior. The whole issue of patient compliance is complex and seems to require more than well-prepared educational materials, innovative approaches, and programs specifically designed for a particular illness, setting, or patient.[24]

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[24]Susan Boehm Steckel, "Predicting, Measuring, Implementing and Following Up on Patient Compliance," Nursing Clinics of North America, 17:491-497, September, 1982.

Summary

In summary, it is evident that many factors play a role in patient compliance with diet modification. The relationship of the physician in regard to patient compliance with medical regimens, particularly adherence to dietary restrictions, is of interest in formulating compliance guidelines.

CHAPTER III

PROCEDURE

This study was designed to examine how a stimulus to the physician in the form of a written reminder would aid in his influencing the patient in compliance with a therapeutic diet. In addition, the influence of physician-patient relationship and the influence of the dietitian as they are related to patient compliance were identified.

Sample Selection

The sample of convenience was selected from those hospitalized patients who had been instructed on a therapeutic diet by a registered clinical dietitian before discharge from a Maryland hospital. A record is maintained by the dietetics staff in which each patient receiving diet instructions is listed, along with the specific diet order, date given, and room number. Patients were eliminated by the researcher if upon discharge from the hospital they were transferred to a nursing home, their home address was an out-of-town address requiring them to see a physician other than the one prescribing diet instructions, or if the researcher was the dietitian to have instructed the patient on a diet.

Each patient was classifed into Group I (Simple) or Group II (Complex) depending on category of diet complexity. The following

criteria were used to determine complexity of diet:

1. Possible complicatons related to health status when there is no compliance or low level of compliance.
2. Amount of time and effort involved to instruct patient.
3. The perceived difficulty associated with following the diet.
4. The number of changes in eating patterns required to manage compliance.

The following are examples of diets in each category:

Group I (Simple)	Group II (Complex)
Low fat	Specific calorie level for weight reduction and/or diabetic
Increased Fiber	
Lactose restricted	Below 2 g sodium
Low calcium	Unmeasured diabetic
Low cholesterol	Combination of two or more restrictions
2 g sodium	
3 g sodium	
High calorie	
High protein	
Bland	
Tyramine restricted	

A stratified random selection was used to designate which patients' physicians were to receive a letter informing the physician of the specific dietary restrictions in which the patient had been instructed (Appendix A). This information was mailed to 105 physicians, prior to the first office visit following discharge from the hospital, within three days of patient discharge. Within each diet complexity category the subjects were randomly divided into two groups: control and experimental. The experimental group was the one in which there was physician intervention (Appendix B).

Every patient was sent a questionnaire approximately six weeks after discharge from the hospital. A total of 203 questionnaires were mailed between December, 1981, and July, 1982. Eighty-six patients were categorized as Group I (Simple) and 117 as Group II (Complex). One hundred thirty-seven completed questionnaires were returned, thus providing a 67% response rate. Group I had a response rate of 81% (70), whereas Group II had a response rate of 57% (67).

The Questionnaire

The questionnaire was designed to overcome "consumer resistance"[25] and so included a total of only ten questions contained on one page

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[25]Stephen Isaac and William B. Michael, Handbook in Research and Evaluation (San Diego: EdITS Publishers, 1981), p. 133.

(Appendix C). A cover letter accompanied the questionnaire (Appendix D), and a stamped, self-addressed envelope was sent with each mailing.

Colors of paper were selected to increase return rate. Past studies have indicated that buff and green paper increased frequency of return.[26] All patients in this study received buff-colored questionnaires, and all physicians received green-colored letters.

Those patients who returned questionnaires indicating that they had not seen their physician since discharge from the hospital were eliminated from the study. Of the 137 questionnaires, 11 (8%) were eliminated.

The first three questions were category questions used to identify respondents. The first question, whether the patient had visited his physician, identified the respondent as an eligible subject. The second question identified those whose physicians had mentioned diet, allowing a distinction to be made between control and experimental groups. Question 3 was included for the information of the investigator and was not included in the analysis.

The next seven questions were Likert-type attitude statements which identified the objectives of the study. Questions 4 and 10 determined

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[26]Dr. Maxine Enderlein. Personal communications in class at Virginia Polytechnic Institute and State University, Northern Virginia campus.

the patients' perception of the physician-patient relationship. Questions 6 and 7 established the patients' self-reported compliance. Questions 8 and 9 were related to the patients' perceived skills of the dietitian. Question 5 determined the patients' understanding of the need for the diet, an essential for dietary compliance, and was related to patient education.

The answer to questions 1-3 was yes - no. These were coded with numbers 2 for yes and 1 for no. The scale for questions 4-6 and 8-10 was strongly agree -agree - disagree - strongly disagree. These were coded with numbers 4 to 1, with 4 being the most positive. Question 7 differed only in the wording of the scale which ranked always - most of time - sometime - not at all. Again the scale was coded with numbers 4 to 1, with 4 being the most positive.

Analysis of Data

The data were coded as interval values for computer analysis through selected subprograms of the Statistical Package for the Social Sciences (SPSS).[27] The frequencies subprogram of SPSS was used to tabulate all data from the questionnaire. Data analysis also included the SPSS subprogram t-test which provided probability levels for testing whether or not the difference between sample means was significant. A 90 per cent level of confidence was accepted for probability of significance.

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[27]Norman H. Nie, et al., Statistical Package for the Social Sciences (New York: McGraw-Hill Book Company, 1970).

CHAPTER IV

RESULTS AND DISCUSSION

The purpose of this study was to determine whether intervention in the form of a letter to physicians would aid the physician in influencing his patient in compliance with a therapeutic diet. The total number of physicians in each of the groups who initiated conversation regarding the patients' diets is shown in Table 1. The same number of physicians in the complex diet group did or did not bring up the subject of diet. However, there was a significant difference ($p = 0.094$) between the intervention and control groups on the simple diet (Table 2). Intervention with physicians did make a difference in the physicians' initiating a discussion of diet among patients with simple therapeutic diets.

The physician-patient relationship variable in patient compliance has been examined as a positive influence in compliance with medical regimens. Frequency of responses regarding the physician-patient relationship in this study are shown in Table 3. There were no

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[28]Barbara S. Hulka, et al., "Communication, Compliance, and Concordance between Physicians and Patients' with Prescribed Medications," AJPH, 66: 874-853, September, 1976.

TABLE 1

FREQUENCY OF PHYSICIANS[1] INITIATION OF DISCUSSION OF DIET

Measures	Yes n (%)	No n (%)
Physician initiation of discussion of patients' diet (Q2)[1]		
Simple Diet Control Group	14(45.2)	17(54.8)
Simple Diet Intervention Group	20(64.5)	10(32.3)
Complex Diet Control Group	25(78.1)	7(21.9)
Complex Diet Interventon Group	25(78.1)	7(21.9)

[1]refers to question number in questionnaire

TABLE 2

MEAN SCORES OF DIET GROUPS' MEASURES OF PHYSICIAN-PATIENT RELATIONSHIP

Measures	n	Score Mean[1] ± S.D.		t Statistic	p[3]
Physician initiation of discussion of patient's diet (Q2)[2]					
Simple Diet Control Group	31	1.45	0.50		
Simple Diet Intervention Group	30	1.66	0.47	-1.70	0.094
Complex Diet Control Group	32	1.78	0.42		
Complex Diet Intervention Group	32	1.78	0.42	0.0	1.00
Perceived physician concern for adherence to diet (Q4)[2]					
Simple Diet Control Group	28	3.28	0.71		
Simple Diet Interventon Group	30	3.26	0.64	0.11	0.915
Complex Diet Control Group	29	3.41	0.56		
Complex Diet Intervention Group	31	3.58	0.62	-1.08	0.283
Perceived physician patient relationship (Q10)[2]					
Simple Diet Control Group	31	3.58	0.50		
Simple Diet Intervention Group	31	3.45	0.56	0.95	0.347
Complex Diet Control Group	32	3.62	0.60		
Complex Diet Intervention Group	31	3.74	0.44	-0.87	0.389

1 range of scores is from 4-1 for strongly agree to strongly disagree (Q4; Q10), and 2-1 for yes - no (Q2)
2 refers to number of question in questionnaire
3 probability level

TABLE 3

FREQUENCY OF RESPONSES TO MEASURES OF PHYSICIAN-PATIENT RELATIONSHIP

Measures	Strongly Agree n (%)	Agree n (%)	Disagree n (%)	Strongly Disagree n (%)
Perceived physician concern for adherence to diet (Q4)[1]				
Simple Diet Control Group	11(35.5)	15(48.4)	1(3.2)	1(3.2)
Simple Diet Intervention Group	11(35.5)	16(51.6)	3(9.7)	--
Complex Diet Control Group	13(40.6)	15(46.9)	1(3.1)	--
Complex Diet Intervention Group	20(62.5)	9(28.1)	2(6.3)	--
Perceived physician patient relationship (Q10)[1]				
Simple Diet Control Group	18(58.1)	13(41.9)	--	--
Simple Diet Intervention Group	15(48.4)	15(48.4)	1(3.2)	--
Complex Diet Control Group	22(68.8)	8(25)	2(6.3)	--
Complex Diet Intervention Group	23(71.9)	8(25)	--	--

[1] refers to number of question in questionnaire

significant differences between control and experimental groups in the t-test analysis of group mean scores for the patients' perception of their physicians' concern for adherence to diet or for the quality of the patients' perceived relationship with their physician (Table 2).

Compliance with the therapeutic diet was determined by patients'/respondents' self-reporting. The actual number reporting compliance or noncompliance are shown in Table 4. Compliance was defined by the patient's indication that he strongly agreed or agreed with the compliance statements. Noncompliance was identified by the patient's indication that he disagreed or strongly disagreed with the compliance statements.

The mean scores of compliance of the control and experimental groups are presented in Table 5. There was a significant difference ($p = 0.030$) between the mean scores of the complex diet control group and the complex diet intervention group in response to problems in adhering to their diets. The complex diet control group had fewer problems adhering to their diet. And even though there was not a significant difference in mean scores of the simple diet group, the simple diet control group also reported fewer problems in adhering to their diet. The results suggest that the intervening physicians may have brought something into the discussion of diet that was not done by the physicians of the control patients.

TABLE 4

FREQUENCY OF RESPONSES TO QUESTIONS RELATED TO COMPLIANCE

Measures	Strongly agree/ Always n (%)	Agree/Most of time n (%)	Disagree/ Sometime n (%)	Disagree/ Not at all n (%)
No problems in sticking to diet (Q6)[1]				
Simple Diet Control Group	9(29.0)	14(45.2)	5(16.1)	1(3.2)
Simple Diet Intervention Group	3(9.7)	20(64.5)	6(19.4)	--
Complex Diet Control Group	13(40.6)	14(43.8)	4(12.5)	--
Complex Diet Intervention Group	6(18.8)	13(40.6)	8(25.0)	1(3.1)
Adherence to diet (Q7)[1]				
Simple Diet Control Group	8(25.8)	18(58.1)	4(12.9)	1(3.2)
Simple Diet Intervention Group	11(35.5)	17(54.8)	1(3.2)	1(3.2)
Complex Diet Control Group	14(43.8)	16(50.0)	1(3.1)	1(3.1)
Complex Diet Intervention Group	7(21.9)	22(68.8)	2(6.3)	1(3.1)

[1] refers to number of question in questionnaire

TABLE 5

MEAN COMPLIANCE SCORES OF EXPERIMENTAL AND CONTROL GROUPS

Measures	n	Score Mean[1] ± S.D.	t Statistic	p[3]
No problems in sticking to diet (Q6)[2]				
Simple Diet Control Group	29	3.06	0.79	
Simple Diet Intervention Group	29	2.89	0.55	0.95	0.344
Complex Diet Control Group	31	3.29	0.69	
Complex Diet Intervention Group	28	2.85	0.80	2.22	0.030
Adherence to diet (Q7)[2]				
Simple Diet Control Group	31	3.06	0.72	
Simple Diet Intervention Group	30	3.26	0.69	-1.11	0.271
Complex Diet Control Group	32	3.34	0.70	
Complex Diet Intervention Group	32	3.09	0.64	1.49	0.141

1 range of scores is from 4-1 for strongly agree to strongly disagree (Q6); or from 4-1 for always to not at all (Q7)
2 refers to number of question in questionnaire
3 probability level

There was no significant difference in mean scores between the control and experimental groups in the self-reported rate of compliance (Table 5). The 90% average rate of compliance found in this study is considered unusual for compliance to a medical regimen (Table 4).[29] The results are self-reported compliance and may be different if judged by a health professional.

Understanding the reasons for limitations and restrictions of diet, medication, or other medical regimens has been established as important to compliance.[30] The number of respondents who replied that they understood the importance of their therapeutic diet are shown in Table 6. The complex diet groups (control and intervention) responded identically.

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[29]Donna R. Falvo, "Improving Patient Compliance," Quality Review Bulletin, 7: 5-8, May, 1981

[30]James Ferguson, "Dietitians as Behavior-Change Agents," JADA , 73:234, September, 1978.

TABLE 6

FREQUENCY SCORES OF RESPONSES TO QUESTION REGARDING PATIENTS' UNDERSTANDING OF REASON FOR DIET

Measures	Strongly Agree n (%)	Agree n (%)	Disagree n (%)	Strongly Disagree n (%)
Patient understanding of reason for diet (Q5)[1]				
Simple Diet Control Group	20(64.5)	10(32.3)	1(3.2)	--
Simple Diet Intervention Group	10(32.3)	17(54.8)	1(3.2)	--
Complex Diet Control Group	21(65.6)	11(34.4)	--	--
Complex Diet Intervention Group	21(65.6)	11(34.4)	--	--

[1] refers to number of question in questionnaire

There was a significant difference in mean scores between the simple diet groups ($p = 0.048$). The mean score for the control group was higher than the mean score of the intervention group (Table 7), indicating that the physician's initiation of discussion of diet was not important in understanding the reason for the diet.

The moderating effect of the dietitian on compliance was examined by the information provided and the skills displayed in providing the necessary information. The tabulated scores of the respondents regarding the dietitian attitude statements are presented in Table 8. The t-test analysis of the group mean scores does not indicate any significant differences (Table 9). Whether the patients were in the control group or the experimental group, they viewed the dietitian much the same.

The data were analyzed for differences between groups by complexity of diet within the control and intervention groups. The mean scores of the control groups and the mean scores of the intervention groups were compared by t-test analysis. The complex diet groups had higher mean scores compared to simple diet groups in all attitude measurements regarding the physician-patient relationship (Table 10).

TABLE 7

MEAN SCORES OF DIET GROUPS' UNDERSTANDING OF REASON FOR DIET

Measures	n	Score Mean[1] ± S.D.	t Statistic	p[3]
Patient understanding of reason for diet (Q5)[2]				
Simple Diet Control Group	31	3.61 0.55		
Simple Diet Intervention Group	28	3.32 0.54	2.02	0.048
Complex Diet Control Group	32	3.65 0.48		
Complex Diet Intervention Group	32	3.65 0.48	0.0	1.000

1 range of scores is from 4-1 for strongly agree to strongly disagree
2 refers to number of question in questionnaire
3 probability level

TABLE 8

FREQUENCY RESPONSES BY DIET GROUPS TO MEASURES RELATED TO THE DIETITIAN

Measures	Strongly Agree n (%)	Agree n (%)	Disagree n (%)	Strongly Disagree n (%)
Dietitian provided necessary information (Q8)[1]				
Simple Diet Control Group	14(45.2)	15(48.4)	2(6.5)	--
Simple Diet Intervention Group	10(32.3)	20(64.5)	--	--
Complex Diet Control Group	23(71.9)	9(28.1)	--	--
Complex Diet Intervention Group	21(65.6)	9(28.1)	1(3.1)	1(3.1)
Dietitian displayed skills (Q9)[1]				
Simple Diet Control Group	10(32.3)	15(48.4)	5(16.1)	--
Simple Diet Intervention Group	10(32.3)	19(61.3)	1(3.2)	--
Complex Diet Control Group	22(68.8)	9(28.1)	--	--
Complex Diet Intervention Group	21(65.6)	9(28.1)	1(3.1)	--

[1] refers to number of question in questionnaire

TABLE 9

MEAN SCORES OF PATIENTS' PERCEPTION OF DIETITIAN OF GROUPS BASED ON INTERVENTION BY PHYSICIAN

Measures	n	Score Mean[1] ± S.D.	t Statistic	p[3]
Dietitian provided necessary information (Q8)[2]				
Simple Diet Control Group	31	3.38 0.61		
Simple Diet Intervention Group	30	3.33 0.47	0.38	0.705
Complex Diet Control Group	32	3.71 0.45		
Complex Diet Intervention Group	32	3.56 0.71	1.04	0.302
Dietitian displayed skills (Q9)[2]				
Simple Diet Control Group	30	3.16 0.69		
Simple Diet Intervention Group	30	3.30 0.53	-0.83	0.410
Complex Diet Control Group	31	3.70 0.46		
Complex Diet Intervention Group	31	3.61 0.66	0.66	0.509

1 range of scores is from 4-1 for strongly agree to strongly disagree
2 refers to number of question in questionnaire
3 probability level

TABLE 10

PHYSICIAN-PATIENT RELATIONSHIP SCORES OF GROUPS BASED ON COMPLEXITY OF DIET

Measures	n	Score Mean[1] ± S.D.	t Statistic	p[3]
Physician initiation of discussion of patient's diet (Q2)[2]				
Simple Diet Control Group	31	1.45 0.50		
Complex Diet Control Group	32	1.78 0.42	-2.82	0.007
Simple Diet Intervention Group	30	1.66 0.47		
Complex Diet Intervention Group	32	1.78 0.42	-1.00	0.320
Perceived physician concern for adherence to diet (Q4)[2]				
Simple Diet Control Group	28	3.28 0.71		
Complex Diet Control Group	29	3.41 0.56	-0.75	0.455
Simple Diet Intervention Group	30	3.26 0.64		
Complex Diet Intervention Group	31	3.58 0.62	-1.95	0.056
Perceived physician patient relationship (Q10)[2]				
Simple Diet Control Group	31	3.58 0.50		
Complex Diet Control Group	32	3.62 0.60	-0.31	0.754
Simple Diet Intervention Group	31	3.45 0.56		
Complex Diet Intervention Group	31	3.74 0.44	-2.24	0.029

[1]range of scores is from 4 - 1 for strongly agree to strongly disagree.

[2]refers to number of question in questionnaire.

[3]probability level

Some of the mean scores were significantly different. A significant difference occurred when comparing simple and complex control groups about whether the physician initiated a discussion about the importance of their diets ($p = 0.007$). The physicians were more likely to initiate discussion of diet with a patient whose diet was defined as complex. The physicians may have viewed their patients' complex modifications to diet as a high priority in their care plan for the patient, and therefore, would not require a reminder.

Also, the physician was perceived by the patient to be concerned about the patient's adherence to the diet if the diet was complex ($p = 0.056$). Patients with complex therapeutic diets were more likely to feel that they had a good relationship with their physicians than were patients whose therapeutic diets were classified as simple ($p = 0.029$).

Compliance mean scores (Table 11) were also compared by complexity of diet. T-test analysis did not reveal any significant differences between mean scores of simple and complex diet groups. The mean scores of the intervention group in response to problems in adhering to their diets indicate that the intervention group had more difficulty in adhering to their therapeutic diets. Since there was not a significant difference in the mean scores, it can be suggested that physicians having received intervention questioned their patients more regarding adherence to diet. Or possibly discuss the restrictions of the diet more with their patients than do the physicians in the control group,

TABLE 11

COMPLIANCE SCORES OF GROUPS BASED ON COMPLEXITY OF DIET

Measures	n	Score Mean[1] ± S.D.	t Statistic	p[3]
No problems in sticking to diet (Q6)[2]				
Simple Diet Control Group	29	3.06 0.79		
Complex Diet Control Group	31	3.29 0.69	-1.15	0.255
Simple Diet Intervention Group	29	2.89 0.55		
Complex Diet Intervention Group	28	2.85 0.80	0.22	0.830
Adherence to diet (Q7)[2]				
Simple Diet Control Group	31	3.06 0.72		
Complex Diet Control Group	32	3.34 0.70	-1.55	0.126
Simple Diet Intervention Group	30	3.26 0.69		
Complex Diet Intervention Group	32	3.09 0.64	1.02	0.311

[1] range of scores is from 4-1 for strongly agree to strongly disagree (Q6), or from 4-1 for always to not at all (Q7)
[2] refers to number of question in questionnaire
[3] probability level

which in turn allows the patients in the intervention group to realize they have not been adhering to the diet as well as they might have thought.

Mean scores of the patients' understanding of the importance of the diet are presented in Table 12. The mean scores were higher for the complex diet intervention group than for the simple diet intervention group ($p = 0.015$). There was however no parallel difference between control groups.

The mean scores of the attitude statements regarding the dietitian were higher for the complex diet (Table 13). In all but one comparison, patients with complex therapeutic diets agreed more strongly that the dietitian provided necessary information and displayed quality skills. The intervention groups were not significantly different ($p = 0.146$) when indicating their perception of the dietitian's providing them with the necessary information to understand the therapeutic diet.

TABLE 12

SCORES OF PATIENTS' UNDERSTANDING BASED ON COMPLEXITY OF DIET

Measures	n	Score Mean[1] ± S.D.	t Statistic	p[3]
Patient understanding of reason for diet (Q5)[2]				
Simple Diet Control Group	31	3.61	0.55	
Complex Diet Control Group	32	3.65	0.48	-0.33	0.743
Simple Diet Intervention Group	28	3.32	0.54	
Complex Diet Intervention Group	32	3.65	0.48	-2.52	0.015

1 range of scores is from 4-1 for strongly agree to strongly disagree
2 refers to number of question in questionnaire
3 probability level

TABLE 13

MEAN SCORES OF PATIENTS' PERCEPTION OF DIETITIAN OF GROUPS BASED ON COMPLEXITY OF DIET

Measures	n	Score Mean[1] ± S.D.	t Statistic	p[3]
Dietitian provided necessary information (Q8)[2]				
Simple Diet Control Group	31	3.38	0.61	
Complex Diet Control Group	32	3.71	0.45	-2.43	0.018
Simple Diet Intervention Group	30	3.33	0.47	
Complex Diet Intervention Group	32	3.56	0.71	-1.47	0.146
Dietitian displayed skills (Q9)[2]				
Simple Diet Control Group	30	3.16	0.69	
Complex Diet Control Group	31	3.70	0.46	-3.59	0.001
Simple Diet Intervention Group	30	3.30	0.53	
Complex Diet Intervention Group	31	3.61	0.66	-2.02	0.048

1 range of scores is from 4-1 for strongly agree to strongly disagree
2 refers to number of question in questionnnaire
3 probability level

CHAPTER V

SUMMARY AND CONCLUSIONS

The premise that a stimulus to the physician in the form of a written reminder would aid the physician in influencing his patient in compliance with a therapeutic diet was examined in this study. Compliance outcome by effect of the physician-patient relationship and by the quality and skills displayed by the dietitian were also studied.

Two hundred three questionnaires were mailed to formerly hospitalized patients who had received instructions on a therapeutic diet before leaving the hospital. Of the 137 returned questionnaires, 126 were identified as usable. Written reminders were mailed to 105 physicians.

Patients were categorized according to complexity of diet -- simple or complex. They were then divided randomly into control or experimental groups. The experimental group received physician intervention in the form of the written reminder to the physician.

Since there was a significant difference ($p < 0.10$) between the control and experimental groups in the simple diet category, the statement can be made that physicians do respond more often regarding their patients' compliance to diet if they receive a stimulus (reminder). Possibly the reason for no difference in the complex diet

category was the integral link between the patient's diet and health status. The physician may view the patient's diet as a high priority in his care plan for the patient and so would not require a reminder.

Compliance with dietary restrictions was reported as being very high. The results are self-reported compliance and may be different if judged by a health professional.

The results from the study do not allow any conclusions to be made regarding the effect of the physician-patient relationship nor the possible influence of the dietitian in relationship to compliance outcome.

The results of the study were analyzed again to determine whether complexity of diet was related to the variables being examined. The results suggest that patients with complex diets perceived the knowledge presented and the skills displayed by the dietitian to be better than perceived by the patients in the simple diet groups. These findings are consistent with the time, effort, and knowledge required of a dietitian to instruct a patient on a more complex diet.

Intervention in the simple diet group was seen as a positive reinforcement to the physician thus resulting in positive reinforcement to the patient. The evidence presented suggests more emphasis should be directed to the patient in the simple diet category. Even though the classification has been labeled simple, it does not suggest that noncompliance is without risk to health maintenance and status.

The evidence seems to justify continued careful evaluation of

intervention measures to improve the physician-patient relationship. Also further development and validation of measurement tools are necessary for better documentation and management of dietary compliance.

A future study based along similiar lines to this study might include a letter not only to the physician but also to the patient. The letter to the patient would be received shortly after hospital discharge explaining to them that a letter of reminder had been sent to their physician indicating the specifics of their dietary restrictions.

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APPENDIX A

LETTER TO PHYSICIAN

DATE:_____

DEAR DOCTOR _____

YOUR PATIENT, _____, WAS INSTRUCTED

ON _____ DIET AT HOLY CROSS HOSPITAL

BY A MEMBER OF THE CLINICAL DIETETICS STAFF.

I HOPE THIS INFORMATION WILL ASSIST YOU IN MAINTAINING YOUR

PATIENT TREATMENT RECORD.

SINCERELY,

SUSAN HAWKINS
SENIOR CLINICAL DIETITIAN

APPENDIX B

STUDY DESIGN

	Complexity of Diets	
	Group I	Group II
Control	N O T R E A T M E N T	
Experimental	R E C E I V E T R E A T M E N T	

APPENDIX C

SAMPLE QUESTIONNAIRE

Questionnaire on Patient Compliance

Please make your answers as specific as possible. Your cooperation is greatly appreciated.

1. Have you had an appointment with your physician since discharge from the hospital? Yes _____ No _____

2. If yes, did your physician bring up the subject of your special diet? Yes _____ No _____

3. If no, did you then bring up the subject of the special diet you were instructed on in the hospital?
Yes _____ No _____

Please circle the response that comes closest to being your opinion.

4. My physician was concerned that I adhere to my diet.

strongly agree	agree	disagree	strongly disagree

5. I understand why I must be on a special diet.

strongly agree	agree	disagree	strongly disagree

6. I have not had any problems sticking to my diet.

strongly agree	agree	disagree	strongly disagree

7. I adhere to my diet.

always	most of time	sometime	not at all

8. The dietitian that instructed me provided all the necessary information for understanding the diet.

strongly agree	agree	disagree	strongly disagree

9. The dietitian displayed quality skills in teaching my diet.

strongly agree	agree	disagree	strongly disagree

10. I feel that as a patient I have a good relationship with my physician.

strongly agree	agree	disagree	strongly disagree

APPENDIX D

COVER LETTER

Susan Hawkins
2925 Hickory Street
Alexandria, Virginia 22305

Dear Former Patient:

I am sending you a questionnaire that will assist me in evaluating compliance to a special diet following hospitalization.

This research is being conducted as part of the requirements for my Masters Degree in Nutrition. Currently I am employed as the Senior Clinical Dietitian at Holy Cross Hospital. The questionnaire will be identified only by a number which enables me to classify it into a particular diet grouping. When returning the questionnaire, it is not necessary to include your name so as to protect your privacy and confidentiality.

Please fill out the enclosed questionnaire and mail it back to me as soon as possible. Use the enclosed envelope for return.

I greatly appreciate your cooperation.

Sincerely,

Susan Hawkins, R.D.

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