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# **“THE EDUCATIONAL CARE” OF PATIENTS WITH CONGESTIVE HEART FAILURE**

Implications from Recent Studies

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THIS paper describes findings from recent community studies of patients with congestive heart failure and the relationship of these findings to the planning for education of patients with this syndrome. The term “educational care” is used primarily to emphasize the point that education of patients with congestive heart failure, as with any health condition, is an integral part of their total medical care and not simply an ancillary service. It is perhaps not by chance that the term “educational care” has come into use in relation to patients with cardiovascular disease,<sup>1</sup> for it has become increasingly clear that careful teaching regarding post-hospitalisation behavior of these patients may influence not only their compliance with medical regimens, but it may influence the degree of wellness and the level of functioning they achieve. It may also be a significant factor that affects their potential for readmission to the hospital and the final outcome of their illness.

The need for further extension and development of services to implement the concept of “educational care” of patients with cardiovascular disease generally and congestive heart failure specifically was considerably reinforced by the findings and recommendations from the Second National Conference on Cardiovascular Diseases.<sup>2</sup>

## **Congestive heart failure: A problem of “educational care”**

Admission and readmission statistics in the United States reveal that congestive heart failure constitutes a fairly large problem in many hospitals. Estimates have placed admissions for congestive

heart failure from 0.9 per cent to 2.0 per cent of *all* hospital admissions<sup>3</sup> and at 6 per cent<sup>4</sup> of admissions to *medical services*. Studies have drawn attention to the greater frequency of congestive heart failure among the elderly.<sup>5</sup> As a part of its magnitude as a medical care problem, congestive heart failure is also a problem of recurring hospitalisations for some patients. One survey found that 20 per cent of the congestive heart failure patients had multiple admissions for this cause.<sup>6</sup>

A precise picture of contributing factors is unavailable, but arrhythmias, emotional disturbances, and over- and under-digitalisation have been implicated from a medical standpoint.<sup>7</sup> According to Zukel, however, in most recurring hospitalisations for congestive heart failure patients have lapsed from an initially adequate regimen. "Since the symptoms of congestive heart failure are insidious in development, the patient may be gradually accumulating edema without distress over a period of weeks before the acute episode of failure suddenly develops."<sup>8</sup> According to Zukel this type of progression can ordinarily be prevented; he regards most readmissions as related to non-compliance on the part of the patient.

The therapeutic regimen prescribed for patients with this syndrome typically consists of: (1) digitalis (to improve myocardial efficiency and to increase cardiac output); (2) diuretics (to increase sodium excretion and thereby increase fluid elimination); (3) sodium restricted diet (to reduce sodium and hence fluid retention); and (4) exercise limitation (to reduce the workload of the heart).<sup>9</sup>

One study of patients revealed that diet was the area most frequently cited for non-compliance, and in another study, lack of rest was most frequently cited.<sup>10</sup> Preliminary findings from still another study indicate that readmitted patients report consumption of more high sodium foods than patients who were not readmitted during a one year period.<sup>11</sup> Studies of emotional components of congestive heart failure have revealed that stress was a significant factor causing some patients not to take their digitalis.<sup>12</sup>

### **Recent studies document educational successes**

Data from two pilot projects undertaken in recent years to influence through education the behavior of patients with congestive heart failure—the Dade County Project and the Loma Linda Project—reveal that it is possible to alter patient behavior

and to achieve, as a result improved adherence to regimen, fewer reported symptoms, higher levels of functioning of patients and a reduction in readmissions to the hospital for this cause.

The study carried out in Dade County, Florida, in 1961 was designed to evaluate the extent to which re-hospitalisations for congestive heart failure could be reduced.<sup>13</sup> The preventive causes of congestive heart failure were thought to be related to four identified patterns: the failure of the patients to keep clinic appointments; their failure to take medications properly; their not following appropriate diet; and their not being aware of warning signs and symptoms that should be reported to the clinic physician. These behaviors, it was believed, might be due to infrequent and inadequate out-patient care. Therefore, it was considered that a monthly evaluation of such patients by a public health nurse, preferably the same nurse each month, might establish better rapport with patients than could be provided by the hospital staff alone. Also, it was reasoned that provisions for more regular observation of signs and symptoms, review of medications, and education on the necessity for proper diet and the keeping of clinic appointments would be of benefit to the patient. In addition, the regular nurse visits would provide continuity of information about the patient to the medical staff.

**TABLE I**  
**Rates for Patient Hospital Days per 1,000 Patient Days at risk in the Dade County Study\***

Causes	Study Group		Comparison Group	
	No. of Days	Rate/1,000	No. of Days	Rate/1,000
Cardiac Causes	332	14.3	571	26.2
Other than Cardiac	210	9.1	333	15.3
Total	542	23.4	904	41.5

\*J. A. Mazzarella, *op.cit.*

Table I shows for both cardiac and non-cardiac causes that the study group who received nursing visits with the educational component spent less time in the hospital than the control group who received no such services. This result obviously meant that a significant saving would accrue in the total cost of in-patient hospital care as far as the community was concerned. The study also noted that there was an improvement in regular attendance at clinics by the study group in contrast to the control groups.

The community program undertaken at Loma Linda California University was a study of "The Prevention of Recurrence of Congestive Heart Failure Through a Comprehensive Health Education and Follow-up Program".<sup>14</sup>

Intensive "educational care" was provided by a health educator, nutritionist, and nurse to a study group of sixty-nine patients in their homes over a period of one year. A control group of sixty-six patients received no similar services but continued under the care of their physicians.

**TABLE II**  
**Hospitalisation Experience of Patients in Loma Linda Project\***

Number of Hospitalisations During Project	Study Group	Control Group
None	61	38
One	6	21
More than one	2	7
Total	69	66

\*S. A. Farag and Harold Mozar, *op.cit.*

Table II shows that not only were there significantly fewer hospitalisations for congestive heart failure for the study group, but there were also fewer days of hospitalisation for congestive heart failure when it did occur in the study group. The researchers discovered also that for some patients "just to know that someone would be returning to the home who was interested in their progress was incentive enough to try to maintain the prescribed regimen when previously they had failed".<sup>15</sup>

In analysing patient behaviors before exposure to the educational program, it was found that 84 per cent of the patients in both groups were not carrying out at least one part of the regimen prescribed by the physician. At the end of the study, it was found that 90 per cent of the patients in the study group were fully co-operating, with greatest improvements being found in the area of diet and physical activity. These improvements were not found to be associated with other factors such as formal education, sex, and age. Of considerable importance is the fact that patients improved considerably in reducing the number of symptoms reported during the course of the program. The number of cases of edema, for example, at the conclusion of the program was lower among the study patients than in the control group at a statistically significant level. The improvement in eleven other reported symptoms for the study patients was also statistically significant.

This project demonstrated that considerable improvement in patient's dietary practices, adherence to regimens, and reporting of symptoms could be obtained through patient education services that extended into a post-hospitalisation period.

"Educational care" in the Loma Linda project consisted of extensive home visits by a health educator, nurse, and dietitian, who employed special interview procedures and counselling techniques; and who made considerable use of visual aids and printed materials designed specifically to teach patients. Tape recorded messages, from the patient's own physician and coloured slides with his picture and information about the condition and the regimen were among the educational methods employed.

Since the patients themselves made substantial improvements, the hospital staff was subjected to a lower burden of cases for whom readmission could be prevented; valuable hospital, medical, and auxiliary staff time could be utilised for other tasks; and considerable financial savings accrued to the patients and their families. It is apparent that the educational program contributed to learnings that patients acquired and to the more adequate performance of behaviors associated with adherence to the regimen. These learnings and behaviors were reinforced and supported by the continued interest and teaching of the staff who visited the patients and through use of the educational materials provided.

### **The Relationship of Patient Beliefs to Action**

The need to examine patient beliefs has been cited as a significant part of the rehabilitation process of patients with heart disease,<sup>16</sup> and considerable data have accumulated in recent years to suggest that there is a positive relationship between the beliefs individuals hold and their taking preventive or therapeutic action.<sup>17</sup> The basic formulation of this belief model is based on a conception of individual health behavior as a function of threat, which is mediated by certain beliefs. Motivation to take preventive or therapeutic actions, it is proposed, is a function of an individual's perception of a threat to his health. In addition the individual's perception involves a belief in his vulnerability, a belief in the potential impact of the harmful event, and a belief in the effectiveness of courses of action available to avoid the threat. Does the model apply, however, to patients with a condition such as congestive heart failure?

When a person's future health is actually in jeopardy by some disease or adverse health condition, he may or may not feel threatened because he fails to accept the event as possible for himself or as having potential severity if it should occur. Further he may not see the available courses of action as effective. According to the model, when a person perceives no threat at all, he will likely not take any preventive steps; and when he does perceive a threat, then the likelihood that he will take such steps becomes greater. The acceptance of these beliefs, it has been proposed, constitutes a set of positive factors which increase the potential for the individual to take prescribed action. While the model is far from validated, and its utility is still in doubt, it appears to be a promising way of looking at why people behave the way they do in regard to health problems or selected health procedures.

A study, undertaken in a large West Coast community with patients who had congestive heart failure, provided the opportunity to gain further understanding of the relationship of the model to patient compliance.

It was hypothesized in the West Coast study that the more severe the patient felt his condition to be the fewer high sodium foods would be consumed; the more he believed his condition could become worse, the fewer high sodium foods would be consumed; and, the more he believed in the effectiveness of the prescribed therapeutic regimen, including the diet, the fewer high sodium foods would be consumed.

While there are some differences in medical opinion regarding the degree of sodium restriction required for a patient with congestive heart failure, there is a rather widespread medical acceptance of the need for restricting sodium intake among patients with congestive heart failure so as to reduce fluid retention.<sup>18</sup> That all patients do not follow the restricted sodium diet appears to be rather common knowledge among health workers and well documented in the literature on this subject.<sup>19</sup>

Seventy-five patients with a diagnosis of congestive heart failure discharged over a sixteen month period from a large metropolitan hospital operating as an integral part of a pre-paid medical care programme completed two interviews in their homes—one interview was held thirty-six hours after discharge from a hospitalisation for congestive heart failure, and the other one at the end of three weeks.

During the interview, three kinds of data on sodium intake were obtained: (1) listing of food eaten by the patient at his last two meals; (2) a check list of thirty-six high sodium foods, taken from the American Heart Association low sodium diet booklets, to which the patient was asked to respond whether he had eaten any of the foods within the last seven days; and (3) a rating by the patient of his use of the salt shaker. Patients who had eaten a considerable number of high sodium foods in the last two meals were, for the most part, those who also indicated they had consumed sodium foods highest on the AHA's list of thirty-six during the prior week. It was of some interest to find that nearly all patients reported either using salt substitutes or not using ordinary salt at the table at all.

For approximately ninety-three per cent of the patients, it was determined from the hospital record that sodium was to be restricted; however, in seventy per cent of the cases, the degree of restriction could not be determined. What was obtained in this study, therefore, is simply an indication of the number of high sodium foods eaten, and it is possible the quantity itself may have been within reasonable limits for these patients from a medical viewpoint.

It is readily apparent that the recall of foods eaten was likely an understatement of the actual number of high sodium foods consumed. This is likely to have occurred because the memory of patients, particularly elderly persons, about foods eaten, even from a list, has a potential for being inaccurate. In all likelihood, they did consume the foods they checked, but in all probability they ate others that they forgot to mention when queried. In addition, there are many high-sodium foods that were not on the list, some of which were undoubtedly eaten and would have increased the number.

It was found in a period of seven days, from a list of 36 high sodium foods, however, that patient responses fell in a range from no high sodium foods to twenty-one high sodium foods with a median of six. It was found, incidentally, that ham and bacon, usually considered "forbidden foods" for patients with congestive heart failure, had been consumed by at least twenty per cent of the patients in the week prior to the interview.

It was possible to observe close association between the individual's beliefs and his reported consumption of high sodium foods. It was found (see Tables III, IV, V), that patients who felt

**TABLE III**  
**Patients' Beliefs about Severity and Consumption of High Sodium Foods**  
**in the West Coast Study\***

Foods Consumed	Six or fewer	Seven or more	Total
Severity Rating			
Eight to nine	16	3	19
Three to seven	22	23	45
Total	38	26	64

$X^2=6.9, P=<0.05$   
 \*Scott Simonds, *op.cit.*

**TABLE IV**  
**Patients' Beliefs about Worsening and Consumption of High Sodium**  
**Foods in the West Coast Study\***

Foods Consumed	Four or fewer	Five or more	Total
Worsening Rating			
One to three (more likely to get worse)	10	7	17
Four	8	13	21
Five to six (less likely to get worse)	5	21	26
Total	23	41	64

$X^2=6.53, 2 \text{ df. } P=<0.05$   
 \*Scott Simonds, *op.cit.*

**TABLE V**  
**Patients' Beliefs about Effectiveness of Regimen and Consumption of**  
**High Sodium Foods in the West Coast Study\***

Foods Consumed	Five or fewer	Six or more	Total
Effectiveness Rating			
Nine to twelve	18	12	30
Three to eight	11	23	34
Total	29	35	64

$X^2=4.9, P=<0.05$   
 \*Scott Simonds, *op.cit.*

their condition was more severe were consuming fewer high sodium foods than those who felt their condition was less severe; that those who felt their condition could become worse were consuming fewer high sodium foods than those who did not feel this so stringently, and that those who thought the regimen including the diet was effective were consuming fewer high sodium foods than those who thought the regimen was less effective.

The three beliefs were found to exist prior to the action studied and to persist for the three week period under study. The data



suggest that there is a strong likelihood that the three beliefs are not only associated with consumption of high sodium foods, but are partial determinants of the behavior.

With the kind of information from this study, however, one could speculate that readmissions for congestive heart failure, which were undoubtedly related to selected medical factors, were also possibly related to excessive fluid accumulation, which in turn was related to consumption of more high sodium foods, which in turn was related to, among other things, what the patient knew and believed about his condition and about the effectiveness of his regimen. The implication is, therefore, that re-hospitalisations could be reduced if one could alter the patient's behaviour through influencing his beliefs.

### Summary

It can be readily seen that in dealing with patients with congestive heart failure, the "educational care" they receive may be a significant variable in influencing patient compliance with regimen; their progress in reaching maximum levels of functioning and in the potential for readmission to the hospital. Likely, the influence of "educational care" on patients with other conditions could be documented.

A number of factors can be identified which contribute towards effective "educational care" including provision of information about the condition and the regimen; maintenance of a support and guidance; and influencing of beliefs related to the condition itself, and the effectiveness of certain components of the regimen.

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## SECURE AGAINST SMALLPOX

A team of several Doctors, Health Visitors, a Health Educator and one Dentist, all on the staff of the Bradford Health Department, have recently completed a 16 mm. colour film "Secure Against Smallpox" with optical sound track. The film incorporates some black and white newsreel material filmed during the Bradford Smallpox epidemic of January 1962. These shots were kindly donated by Granada Television news. Final editing and arrangement of sound track was carried out under the supervision of a professional film maker, Mr. F. G. Dewhirst of Bradford.

It is hoped that the film, which lasts for approximately five minutes and illustrates the simple technique of Smallpox Vaccination, will be reassuring and persuasive to reluctant parents.

The film is now available for general release, and enquiries for purchase can be made to:

Medical Officer of Health,  
Bradford Health Department,  
Central House,  
8 Forster Square,  
Bradford, 1.

The cost is £10 per copy.