Original Article

MEMOIRS HEALTH SCI. MED. KANAZAWA UNIV. Vol. 24 No. 2
67～75 2000

Evaluation of the methods for education and psychological support of patients with diabetic renal failure : Evaluation based on psychological characteristics

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ABSTRACT

To evaluate methods for education and psychological support for patients with diabetic renal failure, we investigated the following problems by means of an interview survey using a questionnaire and a qualitative study using a semi-structural interview in 454 patient from twenty years of age up who had been treated by hemodialysis for at least 1 year and consented to the enrollment in the study.

1. Are there the characteristics of the mental attitude toward the diet and anxiety over dialysis at the introduction of the dialysis therapy in patients with diabetic nephropathy? (The period of the introduction of dialysis was defined as within 3 months from shunt preparation.)
2. How are patients receiving dialysis for diabetic renal failure going to response to the treatment and their restrictived dairly activities?

The following results were proved.

1. These patient with diabetic renal failure had felt serious misgivings about dialysis itself particularly during the first 3months after the beginning of treatment as well as at the period of the introduction of that without distinction after aged. They had also been more anxious with the advanced stage of the disease. Therefore, we should educate various strategies to relieve from their misgivings about dialysis for these patients.
2. In education for patients who have become dependant on hemodialysis due to diabetic renal failure, our study suggests that we should appreciate correctly patients various devices of self management learned by experience of the crisis, and give appropriately our support them to set concrete goal of self management.

KEY WORDS

Diabetic renal failure, Diabetic complications, Hemodialysis, Patient education, Psychological characteristics.

INTRODUCTION

Introduction

Patients with chronic renal failure resulting from diabetic nephropathy (diabetic renal failure) are increasing annually. Of these patients, 15.6% were treated by hemodialysis (dialysis) in 1983, but the percentage increased linearly to 28.4% in 1992[1], and patients with diabetic renal failure came to occupy the greatest percentage of all dialysis patients in 1999. Therefore, it is important to evaluate their care and

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Table 1 : Characteristic of subjects

	Diabetic group			Non−diabetic group		
	Adult n=54	Elderly n=30	Total n=84	Adult n=276	Elderly n=94	Total n=370
Sex male	34 (63.0)	16(53.3)	50(59.5)	151(54.7)	46(48.9)	197(53.2)
female	20 (37.0)	14(46.7)	34(40.5)	125(45.3)	48(51.1)	173(46.8)
Mean age (years)	54.7±7.8	71.8±5.7	60±10.9	50.3±9.5	70.8±4.8	55.5±12.4
History of dialysis						
1～3years	28(51.8)	12(40.0)	40(47.6)	50(18.1)	23(24.5)	73(19.7)
4～6years	15(27.8)	13(43.3)	28(33.3)	60(21.7)	25(26.6)	85(23.0)
7years or longer	11(20.4)	5(16.7)	16(19.1)	166(60.2)	46(48.9)	212(57.3)
Jobs +	16(29.6)	5(16.7)	21(25.0)	151(54.7)	18(19.1)	169(45.7)
−	38(70.4)	25(83.3)	63(75.0)	125(45.3)	76(80.9)	201(54.3)

Date are n (%) or means ± SD

education. However, the characteristics of their problems and needs have not been studied.

The characteristics of patients with diabetic renal failure are considered to be related to management of the disease for prevention of renal failure as a complication of diabetes. They are known to have a tendency to regard renal failure as the terminal stage of their disease or to blame themselves compared with non-diabetic patients. Patients with diabetic renal failure who need dialysis are also expected to show characteristic responses to the acquisition of new knowledge and behavior necessary for the transition from a dietary therapy consisting primarily of restriction of the caloric intake to a dietary therapy consisting of restrictions of protein and water intakes and the management of the dialysis shunt. Although there have been reports on the general psychological profile of dialysis patients and stress in the management of dialysis[2-4], no study on the psychological characteristics of patients with diabetic renal failure has been performed. We, therefore, investigated the psychological characteristics of patients with diabetic renal failure and evaluated methods for their education and psychological support.

Purpose

The purpose of this study was to evaluate methods for education and psychological support of patients with diabetic renal failure for their dietary therapy. For this purpose, we evaluated the following problems.

1. Are there characteristics in patients with diabetic nephropathy concerning the mental attitude toward the diet and anxiety over dialysis at the introduction of the dialysis therapy? (The period of the introduction of dialysis was defined as 3months from shunt preparation.)
2. What are the characteristics of the attitude of patients receiving dialysis for diabetic renal failure to dialysis and restrictions in living?

Methods

1. Research Design

The first problem was evaluated retrospectively by an interview using a questionnaire. The second problem was studied by an inductive approach using a qualitative method, because the significance of the phenomenon from the viewpoint of the subjects must be clarified.

2. Subjects

The subjects were 454 dialysis patients aged 20

Table 2 : Characteristic of subjects of qualitative research

Subjects	Diabetic or Non-Diabetic renal failure	Sex	History of DM (years)	Complications
1	DM	Male	3	Non
2	DM	Male	1	Cerebral infarction
3	DM	Female	5	Retinopathy
4	DM	Female	5	Retinopathy
5	DM	Male	3	Retinopathy
6	Non-DM	Male	4	Non
7	Non-DM	Male	3	Non
8	Non-DM	Male	9	Non

DM : Diabetic Mellitus

Table 3 : Thoughts about diet at introduction of dialysis

	Diabetic group			Non-diabetic group		
	Adult n=54	Elderly n=30	Total n=84	Adult n=276	Elderly n=94	Total n=370
Diet at introduction of dialysis						
Become milder	9(16.6)	5(16.7)	14(16.7)	68(24.6)	21(22.3)	89(24.0)
Not change	15(27.8)	12(40.0)	27(32.1)	56(20.3)	19(20.2)	75(20.3)
Become severer	30(55.6)	13(43.3)	43(51.2)	152(55.1)	54(57.5)	206(55.7)
Amount of diet in Maintaining						
Quite large	30(55.6)	12(40.0)	42(50.0)	150(54.3)	45(47.9)	195(52.7)
Some what	3(5.6)	4(13.3)	7(8.3)	49(17.8)	21(22.3)	70(18.9)
Moderate	9(16.6)	6(20.0)	15(17.9)	42(15.2)	13(13.8)	55(14.9)
Small	9(16.6)	4(13.3)	13(15.5)	29(10.5)	6 (6.4)	35 (9.5)
Without	3(5.6)	4(13.3)	7(8.3)	6(2.2)	9 (9.6)	15 (4.0)

Date are n (%)

years or above who had been receiving dialysis at one of 18 hospitals in or near Kanazawa City for at least 1 year and consented to the enrollment in the study. Before requesting cooperation in the study, the investigators explained the intention and methods of the study to the physicians and nurses and obtained their consent.

Then, the investigators were introduced to the patient by their care-providers, and obtained consent from the patient after explaining the purpose and contents of the study.

Of these subject, 84, consisting of 54 aged 64 years or less (adults) and 30 aged 65 years or above (elderly) had diabetic renal failure. The remaining 370 subjects, consisting of 276 adults and 94 elderly, had non-diabetic renal failure and were evaluated as a control group.

A total of 8 patients, i.e. 5 patients with diabetic

Table 4 : Anxiety at the introduction of dialysis

(plural answer)

	Diabetic group			Non-diabetic group		
	Adult n=54	Elderly n=30	Total n=84	Adult n=276	Elderly n=94	Total n=370
Anxiety before dialysis						
Matters related to the dialysis	17 (31.5)	14 (46.7)	31 (36.9)	92 (33.3)	38 (40.4)	130 (35.1)
Matters related to the shunt	6 (11.1)	7 (23.3)	13 (15.5)	53 (19.2)	17 (18.1)	70 (18.9)
Matters related to the future	14 (25.9)	1 (3.3)	15 (17.9)	40 (14.5)	8 (8.5)	48 (13.8)
Matters related to the diet	3 (5.5)	3 (10.0)	6 (7.1)	17 (6.2)	6 (6.4)	23 (6.2)
Others	13 (24.1)	5 (16.6)	18 (21.1)	25 (9.1)	12 (12.8)	37 (10.0)
Anxiety at 3 month from dialysis start						
Matters related to the dialysis	35 (64.8)	14 (46.7)	49 (58.3)	185 (67.0)	59 (62.8)	244 (65.9)
Matters related to the shunt	9 (16.7)	1 (3.3)	10 (11.9)	22 (8.0)	3 (3.2)	25 (6.7)
Matters related to the future	15 (27.8)	4 (13.3)	19 (22.6)	96 (34.8)	17 (18.1)	113 (30.5)
Matters related to the diet	4 (7.4)	8 (26.7)	12 (14.3)	62 (22.5)	15 (16.0)	77 (20.8)
Others	11 (20.3)	7 (23.3)	18 (21.4)	53 (19.2)	14 (14.9)	67 (18.1)

Date are n (%)

renal failure and 3 patients with non-diabetic renal failure treated at the dialysis center of one of the 18 hospitals with about 400 beds, were selected for evaluation of the second problem. All of them had a 1 years or longer history of dialysis, and dialysis was confirmed to be the only factor that affected their psychological problems concerning their living as patients. Table 2 shows the characteristics of the 8 patients. Informed consent was obtained from the patients and their attending physicians.

All these patients received dietary guidance by the medical staff at the introduction of dialysis.

3. Methods for date collection

The interview using a questionnaire was carried out according to the questionnaire during dialysis. The investigators recorded the answers and checked the entries with the subjects after dialysis. The questionnaire was about the subjects' anxiety at the introduction of dialysis and their thoughts about the diet. Answers concerning anxiety were obtained as free accounts by diving the period of introduction of dialysis into a period from shunt preparation to the beginning of dialysis (before dialysis) and a period from the beginning of dialysis to after 3 months (after dialysis).

Qualitative research was made by letting the subjects talk as specifically as possible in a semi-structural interview with the investigators. The interview conducted during dialysis was recorded with a cassette tape recorder, and the records were transcribed and used as the date. In the interview, questions were presented in plain words such as, "Please talk about the state of your self-management before you began to receive dialysis." to clearly convey the intention of the question.

Information about individual subjects such as the age, gender, history of dialysis, responsible disease, and complications were obtained from clinical records.

4. Date analysis

The subjects were classified into diabetic and non-diabetic patients, and each group was divided into adults and elderly. The percentages of diabetic and non-diabetic patients were compared in all subjects and by age levels. The answers concerning the

Table 5 : Comparison of mental condition of patients with diabetic or non-diabetic renal failure

Item	Characteristically exhibit	
	Patients with diabetic renal failure	Patients with non-Diabetic renal failure
Course of the responsible diseases to dialysis	Management life without readiness for dialysis	Prepared for exacerbation of the kidney condition regardless of self-management
Thoughts about the state of self-management to dialysis	Poor self -management	No experienced self-management
Thoughts at the announcement of introduction of dialysis	Better choice than "death or direct harm disease"	More "specific anxiety and shock"
Responses to dietary change	· Simply as change (These were some change in the diabetic diet) · Joy of imagining and setting goals within the restrictions	
Thoughts about the prognosis	Uncertainty of living or live	Trouble with specific solution

anxiety at the introduction of dialysis were all transcribed, and those of similar contents were grouped representative answers.

From the answers obtained by the qualitative research method , words related to the problems set for the study were selected, their contexts were reevaluated, compared them with the answers to other questions, the meaning of each utterance was discussed among co-investigators, common meanings were extracted, and they were categorized and titled.

RESULTS

I . Results of Questionnaire

1 . Characteristics of subjects

The mean age of the diabetic group was 54.7 years for the adults and 71.8 years for the elderly. The history of dialysis was 13 years in 50% of the adults and I -3 years and 4 - 6 years in 40% each of the elderly.

In the non-diabetic group, the mean age was 50.3 years for the adults and 70.8 years for the elderly. The history of dialysis was 7 years or longer in 60% of the adults and 50% of the elderly. Among the adults, 50% had jobs.

2 . Thoughts about the diet at introduction of di alysis

1) Comparison between patients with and witho diabetes

Dietary restrictions at the introduction of dialysi were considered to have "become severer" by 51.2% and "not changed" by 32.1% in the diabetic grou and to have "become severer" by 55.7% and "becom milder" by 24% in the non-diabetic group.

The amount of the diet in maintaining health wa considered to be "quite large" by 50.0%, "moderate by 17.9% and "small" by 15.5% of the patients wit diabetic renal failure.

2) Comparison in diabetic patients according t age

Dietary restriction at the introduction of dialys were considered to have "become severer" by 55.6% of the adults, but they were considered to have "b come severer" by 43.3% and "not changed" b 40.0% of the elderly. Those who replied that the have "become milder" accounted for about 17% both the adults and elderly. The amount of the diet maintaining the health was considered to be "qui large" by 55.6% "moderate" by 16.6%, and "smal by 16.6% of the adults and to be "quite high" b

40.0% and "moderate" by 20.0% of the elderly.

3. Anxiety at the introduction of dialysis

1) Comparison between diabetic and non-diabetic patients

In the diabetic group, the anxiety before dialysis was about "matter related to dialysis" in 36.9%, "matters related to the future" in 17.9%, and "matters related to the shunt" in 15.5%. The anxiety after dialysis was about "matters related to dialysis" most frequently (58.3%), showing an increase compared with the percentage before dialysis, followed by "matters related to the future" (22.6%) and "matters related the diet" (14.3%). The "matters related to dialysis" expressed before dialysis were primarily vague anxiety and rejection and expected discomfort of deprivation of time by dialysis, but those mentioned after dialysis were primarily loss of time by dialysis and subjective physical symptom associated with dialysis. The "matters related to the future" expressed before dialysis were primarily vague fear for the future or death, but those mentioned after dialysis were primarily fear for death and anxiety over rehabilitation induced by the death of other dialysis patients and the realization that they cannot live without dialysis.

In the non-diabetic group, the anxiety concerning "matters related to dialysis" were mentioned most frequently (35.1%), followed by "matters related to the shunt" (18.9%) and "matters related to the future" (12.9%) before dialysis. After dialysis, "matters related to dialysis" were mentioned by the greatest percentage of patients (65.9%), showing an increase compared with the value before dialysis, followed by "matters related to the future" (30.5%) and "matters related to the diet" (20.8%).

The "matters related to dialysis" mentioned before dialysis were primarily anxiety over the lack of knowledge or vague anxiety over dialysis and hesitation and rejection. Those mentioned after dialysis included deprivation of time and restrictions of activity range, subjective symptoms associated with dialysis and pain of puncture, and anxiety over the lack of knowledge. The "matters related to be future" were specific expectations of the remaining life span and death based on knowledge and realistic anxiety over rehabilitation both before and after dialysis. Particularly, a high percentage of subjects answered that they become psychologically unstable, feeling as if "their lives were finished" or they "did not want to live any longer".

2) Comparison in diabetic patients according to age

The anxiety expressed by the adults was most frequently about "matters related to dialysis" (31.5% and 64.8% before and after dialysis, respectively), "matters related to the future" (25.9%, 27.8%), and "matters related to the shunt" (11.1%, 16.7%). The elderly frequently expressed anxiety over "matters related to dialysis" (46.7%), "matters related to the shunt" (23.3%), and "matters related to the diet" (10.0%) before dialysis and anxiety over "matters related to dialysis" (46.7%), "matters related to the diet" (26.7%), and "matters related to the future" (13.3%) after dialysis.

II. Result of qualitative research

1. Courses of the responsible diseases to dialysis

The patients with diabetic renal failure needed dietary therapy for 15-20 years. However, though they vaguely felt that dialysis was necessitated by exacerbation of diabetes, they characteristically exhibited "management of life without readiness for dialysis". Patients with non-diabetic renal failure, on the other hand, were told that there was no complete cure or effective remedy at the diagnosis of the responsible disease and had become "prepared for exacerbation of the kidney condition regardless of self-management".

2. Thoughts about the state of self-management before dialysis

The patients with diabetic renal failure developed renal thought that their condition was gradually exacerbated by these complications. Although they denied direct connection between dialysis and poor self-management, they felt a relationship between complications and poor self-management. However, as the importance of self-management was not emphasized in patients with non-diabetic renal failure, they did not consider themselves responsible for their dependence on dialysis.

3. Thoughts at the announcement of introduction of dialysis

The patients tended to consider dialysis a better

choice than "death or direct harm of the disease" although they were shocked to know that they needed dialysis. Particularly, those who were previously at risk of loss of vision due to diabetic retinopathy and those whose life was endangered by food poisoning accepted dialysis as a natural result of the progression of the disease.

The patients with non-diabetic renal failure expressed more "specific anxiety and shock" such as the shock of being handicapped and the anxiety of not being able to work and how long they would be able to live by connecting the harm of dialysis with actual living.

4. Responses to dietary changes

The patients with diabetic renal failure tended to regard changes in the dietary management "simply as changes". They considered that "these were some changes in the diabetic diet that they had practiced". Also, they expressed the management of the water intake as troublesome, but they mentioned specific contrivances to comply with the restriction of the water intake such as reducing the water contents of the food by evaporation and weighing the food at each meal. In doing so, they found the "joy of imagining and setting goals within the restrictions" and looked forward to observing no weight gains.

In contrast, all 3 patients with non-diabetic renal failure had different thoughts. One reported no change after dialysis compared with before dialysis ; another observed that the dietary restrictions were severer before dialysis and a nearly ordinary diet except for fruits was possible after dialysis ; the third felt that the restriction of the water intake was moderate before dialysis but became severer after dialysis. Two of them described compliance to the restriction of water intake as difficult.

5. Thoughts about the prognosis

The patients with diabetic renal failure told their lives as transitory ones, because they had felt that they were living extra time and thought for how many more years they would live, they were trying to survive from they to day, and they tried to have diversions and were making efforts not to fall depressed. In contrast, of the patients with non-diabetic renal failure, one worried about one's life, and two worried about the pain during dialysis, and they were afraid they would be unable to keep working. The accepted these worried "As troubles which would b coped with specific solutions".

DISCUSSION

Concerning dietary restrictions at the introductio of dialysis, they were considered to be have becom severer by nearly half the patients with diabetic rena failure similarly to those with non-diabetic renal fail ure. However, more patients with diabetic renal fail ure considered that the severity of dietary restriction were unchanged than patients with non-diabetic rena failure particularly among older ones. The amount o the diet in maintaining the health was considered t be large by 60% of the patients with diabetic rena failure and by 70%of those with non-diabetic rena failure. Also, the percentage of patients who men tioned the diet as a matter of anxiety increased durin the 3 month after the introduction of dialysis in pa tients with non-diabetic renal failure regardless of th age, but it showed no change and remained low i the adult patients with diabetic renal failure.

These results suggest that patients with diabeti renal failure considered the new dietary restrictions t be continuation of the dietary restrictions for diabete despite differences in their contents and felt no majo difference in the necessity of dietary restrictions These characteristics is a point to be considered i the care of patients with diabetic renal failure.

The anxiety that the patients felt at the introductio of dialysis frequently concerned matters related to di alysis before the beginning of dialysis in both th adults and elderly, and their percentage further in creased during 3 months after the beginning of dialy sis. Takura[5] studied the relationship between th state of acceptance of dialysis and knowledge in pa tients with chronic nephritis. The percentage of pa tients who expressed anxiety over dialysis increase despite the lapse of time, probably because of th lack of knowledge about dialysis, which had alread become a reality. Therefore, education of facts abou dialysis is considered to be needed at least for months after the beginning of dalysis.

Concerning the results of qualitative investigatio those that agreed with and those that disagreed wit expectations were evaluated.

Among the findings that disagreed with the expectations, the patients with diabetic renal failure felt no clear remorse over the course that led to renal failure requiring dialysis. One of the reasons is considered to be that many of them become dependent on dialysis after they have experienced diabetic complications such as retinopathy and cerebral infarction. These are direct threats to life and living, and the patients are considered to more readily accept dialysis as an addition to the existing predicaments. They had gone through crises at the appearance of other complications so that expectation of grief was considered have been established before the condition aggravated to renal failure. Concerning the dietary therapy, patients with diabetic renal failure had been on a diabetic diet for a long a long period, and they showed adjustments change in restrictions of the diet and water intake. They set readily attainable goals of self-management such as keeping the body weight on the 3 weekly occasions of dialysis and could have greater motivation in living, because the results of good compliance to restrictions quickly and clearly appear in renal failure while good behavioral control is not rewarded clearly in the control of diabetes. While the patients with non-diabetic renal failure had anxiety directly related to conditions of living, those with diabetic renal failure showed strong thoughts about being alive itself. These findings are considered to reflect uncertainty of the patients about their survival despite their having goals of controlling renal failure in daily living. Although the anxiety over conditions of daily living may be solved or alleviated by devising concrete measures, concerns over life itself are difficult to manage by whatever measures.

Psychological characteristics of diabetic patients agreed with the expectation. A depressive tendency has already been reported[6] as a psychological characteristic of diabetic patients. While this tendency was clarified, specific psychological circumstances of patients with diabetic renal failure have not been reported.

The results of our present study suggest that the patients had deep and fundamental anxiety over and uncertainty about their survival despite their acceptance of dialysis, and the findings are considered to have important implications in patients education. Mutual consolation among patients by means such as group guidance has been reported[7] to be necessary to manage such psychological programs, and aggressive introduction of such approaches is suggested to be needed.

A limitation in generalization of the results of this study is that it did not address the contents of patients education before the subjects came to need dialysis. From our review of the literature[8] on diabetic education in general, we made this evaluation on the assumption that patients with diabetic renal failure receive similar education to those with non-diabetic renal failure. The relationship between psychological responses of patients with diabetic renal failure and the contents of their education must still be evaluated, and this relationship be verified by intervention studies.

SUMMARY

Psychological characteristics concerning responses to hemodialysis in patients with diabetic renal failure on dialysis therapy were evaluated using patients with non-diabetic renal failure as controls. The following results were obtained.

1. The patients had many concerns over dialysis both before and after the beginning of dialysis, and such concerns increased during the first 3 months after the beginning of dialysis. This tendency was observed in both diabetic and non-diabetic patients.
2. A out half the patients considered that dietary restrictions became severer after the beginning of dialysis. The weight of the diet in maintaining the health was considered large by 60% of the patients, but this percentage was lower than 70% in those with non-diabetic renal failure.
3. The percentage of patients who mentioned the diet as a matter of concern increased during the first 3 months after the beginning of dialysis in patients with non-diabetic renal failure, but it remained nearly unchanged and low in the adults with diabetic renal failure.
4. Although the patients did not consider dialysis to be directly related to self-management, they felt "poor self-management" to be responsible for complications.
5. The patients tended to consider their dependence

on dialysis "better than death or direct harm of the disease" despite the shock of having to undergo dialysis.

6. The changes in the dietary management tended to be accepted "simply as changes".

7. The thoughts of the patients about the prognosis indicated their "transitory their lives".

Patients with diabetic renal failure of all ages were shown to have characteristic anxiety over dialysis itself and its relationship with the progression of the disease not only at the beginning of dialysis therapy but also for 3 months thereafter, and measure for their therapy but also for 3 months thereafter, and, measures for their management are considered to be needed in patient education. Also, proper evaluation, based on the understanding of the crises that they have experienced, of the contrivances learned by the patients themselves through experience for the management of the disease, cooperation with the patients in setting concrete goals of self-management, and aggressive intervention to alleviate chronic depression were suggested to be needed in education of patient who have become dependent on dialysis due to diabetic renal failure.

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糖尿病性腎不全患者への教育と心理的支援方法の検討
－心理的特徴からの検討－

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要　　旨

本研究は，糖尿病性腎不全患者への教育と心理的支援方法を検討する目的で，人工血液透析導入後１年以上経過した，20歳以上で，研究参加の同意と承諾を得た454人を対象に，質問紙を用いた面接調査と質的研究手法による半構成的面接により，下記の研究的問いを明らかにした。

1．糖尿病性不全患者の人工血液透析導入期の食事に対する思いと，そのきがかりの特徴は何か。（人工血液透析導入期はシャント作成から透析開始３ヶ月までとした）

2．人工血液透析を受けている糖尿病性腎不全患者の，人工血液透析の受けとめ方と生活規制の受けとめ方はどのような種類があるか。

その結果以下のことが明らかになった。

1．糖尿病性腎不全患者は，年齢に関係なく，人工血液透析導入期に加えそれ以降，特に透析開始３ヶ月まで，人工血液透析そのものへの気がかり，病気の進行との関係に対する心理的特徴があり，教育はそれらを配慮した対応が必要であることが示唆された。

2．糖尿病性腎不全が原因で人工血液透析に至った患者は，生きることの危機を既に体験している場合が多く，彼らへの教育は，患者自身が体得している様々な取り組みに対して，適切に評価し，具体的な目標設定に協力し，さらに慢性的な鬱状態に対して，積極的な自己管理を導入する必要性が示唆された。