Positivity scale for type-2 diabetes patients with renal failure

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Positivity scale for type-2 diabetes patients with renal failure

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Abstract

Purpose: The objectives of the present survey were set as follows:
1. To prepare a positivity scale for type-2 diabetic renal failure patients for the psychological construct of "Belated conviction of having worked hard to take care of oneself" medical-care perception, which was a result reached inductively in the previous study.
2. To elucidate the relationships of the position on the positivity scale with QOL and duration of diabetic nephropathy treatment for type-2 diabetic renal failure patients.

Methods: An interview- and questionnaire-based survey was carried out with 70 type-2 diabetes patients with renal failure. The answers to questions about 12 items relating to the psychological construct of the "I will overcome my regrets" medical-care perception were evaluated by factor analysis. The validity of the scale was tested using the GSES scale, and the correlation coefficient. With respect to the characteristics of the positivity scale, QOL is determined using the KDQOL-SF^{TM}1.3 scale, and its correlation with duration of diabetic nephropathy treatment is obtained using the correlation coefficient.

Results: The outcome was that the three parameters that made up the scale in this research were factors, and were the same as the items in the previous qualitative research. Reliability was confirmed on the basis of the internal consistency of the three parameters. The concurrent validity was confirmed on the basis of significant correlation between the GSES scale and the positivity scale. Both the positivity scale and quality of life (QOL) showed significant positive correlations with the following parameters in the KDQOL-SF^{TM}1.3 scale: social functioning, emotional well-being, general health perception, burden of kidney disease, and sleep.

Discussion: The ability to hold the "Belated conviction of having worked hard to take care of oneself" medical-care perception resulted in favorable QOL after introduction of dialysis. In addition, for high-level medical-care perception, it is necessary to recognize the condition as diabetic nephropathy, and to undergo treatment, for a significant period.

Key words

type 2 diabetes mellitus, diabetic nephropathy, scale, complication, quality of life

Introduction

On the basis of an overview of regular dialysis treatment in Japan, 2009[1] diabetic nephropathy is the most frequent primary disease of patients with whom dialysis is initiated, and 44.5% of all dialysis patients have this disease. Two major concerns with respect to this proportion are that the number of diabetes patients is increasing every year, and that it can be expected to increase more in future, with the aging of society. For these

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reasons, it is important to establish methods for early identification of diabetic nephropathy patients, providing appropriate treatment, and ensuring compliance with self-care behavior. However, early treatment of diabetic nephropathy patients is difficult, because diabetic nephropathy frequently first comes to light with detection of proteinuria, and onset of symptoms such as edema, by which time the condition has become irreversible, and progressive renal failure will occur[2]. There has been almost no research on the issues of how patients accept the news of having irreversible and progressive renal failure, and take self-care behavior afterward.

We have previously conducted research on the psychology and medical-care perceptions of diabetic patients with renal failure. The findings clearly showed that the first subjective awareness of nephropathy on the part of patients with diabetic nephropathy is when difficulties with daily life develop. In addition, it was clearly shown that renal failure patients undergoing dialysis lived their lives while having an "I will overcome my regrets" medical-care perception[3], and that there were differences in patients' acceptance of their situations due to the different approaches taken to overcoming their regrets. Furthermore, these differences are suggested to be due to different self-assessments of the attempts at self-care behavior before the onset of complications. It is therefore suggested that education of diabetic nephropathy patients, starting before the onset of complications, must involve vigorous promotion of a subjective understanding that complications will appear, and it was concluded that the development of such a system of care is an urgent task.

The present survey was planned as part of the above development of a system of care. It was clearly shown in the previous study that the "I will overcome my regrets" medical-care perception can be divided into the following five types:

(i) "Belatedly convincing oneself of having worked hard to take care of oneself"
(ii) "I accept that I caused this".
(iii) "I am disgusted at myself, but there is nothing I can do now"
(iv) "Perhaps I could have been done a little more, but it cannot be helped now"
(v) "I have decided not to bother much about this"

Among these five types, the present survey was based on the understanding that the "Belatedly convincing oneself of having worked hard to take care of oneself" medical-care perception has a positive effect on the patient's acceptance of his/her situation. The present survey was therefore carried out on the basis of the assumption that the qualitative results showed that patients have the following characteristics: (i) he/she regrets that the condition has worsened, but feels that he/she can still make efforts at self-care after developing diabetic complications, and therefore makes considerable effort in this respect; and (ii) he/she thinks that he/she should have realized the true situation earlier, but considers that he/she did try hard, and can still be keen about undergoing medical treatment. In a previous study, it was reported that patients who underwent dialysis because of diabetic nephropathy had negative perceptions, and no patients were reported to have forward-looking medical-care perceptions. The medical-care perception that involves a strong sense that "Belatedly convincing oneself of having worked hard to take care of oneself" is considered to have a specific meaning that is not found with other types of medical-care perception. In addition, in the same previous study[4], patients' characteristics were identified qualitatively on the basis of differences in medical-care perception noted by their nurses and physicians, and the finding was that strongly holding the medical-care perception that "Belatedly convincing oneself of having worked hard to take care of oneself" leads to psychological stability, and to patients accepting and going along with the process of dialysis. On the basis of the above two findings, it is considered that the medical-care perception that "Belatedly convincing oneself of having worked hard to take care of oneself" results in a positive view of previous self-care behavior, psychological stability, and positive motivation with respect to future medical care. In addition, the position that "I will

overcome my regrets" is defined as the perception that the onset or progression of complications has been regrettable, but one must see it could not been helped.

Previous education of diabetes patients had the aim of preventing the onset of complications, and there have been almost no reports about educational or similar care provided to patients who have already developed complications of diabetes. In particular, no attempts have been made to clarify, on the basis of the significance accorded to medical treatment, whether patients are able to deal with their conditions in a forward-looking manner. In this context, it necessary to clarify whether the "Belatedly convincing oneself of having worked hard to take care of oneself" medical-care perception is a positive perception for diabetes nephropathy patients, and whether a high score with respect to this item indicates a favorable quality of life (QOL).

On the basis of the above, the objectives of the present survey were set as follows:

1. A positivity scale for diabetic renal failure patients is to be prepared for the psychological construct of the "Belatedly convincing oneself of having worked hard to take care of oneself" medical-care perception, which was a result reached inductively in the previous study.
2. The relationships of the position on the positivity scale with QOL and duration of diabetic nephropathy treatment are to be elucidated for diabetic renal failure patients.

Definitions of Terms

The duration of diabetic nephropathy treatment is defined as the time for which such treatment is provided after the relevant patient recognizes that he/she has diabetic nephropathy.

Methods

1. Subjects

The subjects were type-2 diabetes patients who were undergoing out-patient dialysis treatment for diabetic renal failure at any of five clinical institutions within Prefecture A that have dialysis centers.

The exclusion criteria were cognitive disorders, and inability to respond to the survey questions.

2. Survey duration

The survey was continued from February 2009 to March 2010.

3. Survey methods

1) Data collection methods

Using a questionnaire-based method, the patient's dialysis history was confirmed from medical records, and participants were interviewed about other questions, in order to increase the reliability of the survey. Participants selected appropriate times for the interview, either during or after completion of dialysis, and interviews with each participant were carried out over 2 days.

2) Survey details

(1) Fundamental information

The following six items of fundamental information were determined: sex, age, decade of age at onset of diabetes, duration of out-patient treatment of diabetes, presence or absence of other chronic complications, and duration of dialysis.

(2) Diabetes medical-care perception

The survey questions were prepared on the basis of the qualitative results of the previous study[3]. These questions consisted of the 12 "I will overcome my regrets" medical-care perception items, including the three "Belatedly convincing oneself of having worked hard to take care of oneself" medical-care perception items (Tables 1, 2).

The validity of the details of these questions was assessed by three researchers working on nursing care for diabetes. In addition, the style of the written expressions was confirmed for diabetic renal failure patients.

Each item of the responses to the questions was scored as follows, on the basis of a five-point Likert scale: "I completely agree": 5 points; "I largely agree": 4 points : "I cannot decide whether I agree": 3 points: "I largely disagree": 2 points; and "I completely disagree": 1 point.

(3) Verification of validity

A general self-efficacy scale (GSES) was used. Self-efficacy is a key element of the antecedent factors relating to behavior, and is thus an important cognitive variable for defining human behavior. The scale has 16 items, with higher

Table 1. Questions on medical-care perception for diabetic renal failure patients

Medical-care perception obtained inductively in previous study	Explanation	Question items
I was late, but I accept that I did all I could	Deterioration of disease could not have been helped, and it would have been better if I had realized earlier. Although since the onset of complications, I accept that I have done whatever I could.	1. Once treatment for diabetes had been initiated, I did everything I could. 2. As a result of my own efforts, initiation of dialysis was put off longer than expected. 3. My lifestyle has been restricted by diabetic nephropathy, so my lifestyle while undergoing dialysis may be easier.
I accept that I caused this	Reflecting on my behavior and clarifying the cause of complications, I could understand that it would have been better for me to have acted differently, and accept that complications could not have been helped.	4. I fully understand self-care behavior that led to the complications. 5. Other important matters took priority, and I did not take appropriate treatment.
I am disgusted at myself, but there is nothing I can do now	It is natural that the complications have progressed. I am disgusted with how I lived, but I found myself unable to do otherwise at the time, so I tell myself that can't be helped.	6. Of course, the need for dialysis is due to my own lifestyle, which I myself am now disgusted about. 7. I regret that my behavior has made dialysis necessary, but at that time I had no choice.
Perhaps I could have been done a little more, but it cannot be helped now	I need to struggle to overcome the strength of the feelings that perhaps, together with the physicians, I could have done something to prevent progression of complications, and of regret.	8. I suppose I could have done a bit more to avoid needing dialysis. 9. When my diabetes treatment started, treatment methods were not very advanced. 10. When I was told that dialysis might be necessary, I was surprised that the condition had progressed without me realizing.
I have decided not to bother much about this	When I confronted the situation of anxiety as to how my condition would change, and being unable to ignore my condition, I decided not to worry too much about it, and to continue with my ordinary life. I also decided not to worry about complications, and to avoid confusion in my own emotions.	11. I was not concerned even when told that the complications of diabetes were progressing. 12. However much I worry about my diabetic condition, it will make no difference, so I try to forget about it.

Table 2. Positivity scale for diabetic renal failure patients: Question items

Question items
1. Once treatment for diabetes had been initiated, I did everything I could.
2. As a result of my own efforts, initiation of dialysis was put off longer than expected.
3. My lifestyle has been restricted by diabetic nephropathy, so my lifestyle while undergoing dialysis may be easier.

scores indicating higher levels of self-efficacy, and its reliability and validity have been demonstrated[5]. The evaluation is carried out on the basis of the total score, with the score range being 0 to 16.

(4) Characteristics of positivity scale for diabetic renal failure patients ; The relationships with QOL and duration of diabetes treatment were investigated.

①Relationship with QOL; KDQOL-SF^{TM}1.3 was used, this being composed of a scale specific to renal disease, and a comprehensive scale (SF-36v2^{TM}). The scale specific to renal disease was an 11-point sub-scale, including the following: 43 items: symptoms: 12 items; effects of kidney disease on activities of daily life: 8 items; burden of kidney disease: 4 items; work status: 2 items; cognitive function: 3 items; quality of social interaction: 3 items; sexual function: 2 items; sleep: 4 items; social support: 2 items; encouragement from dialysis staff: 2 items; and patient's satisfaction with dialysis care: 1 item. The SF-36v2^{TM}, scale is a comprehensive scale, including an eight-point

sub-scale with 35 items relating to health, and an additional one item relating to overall health evaluation, making it a 36-item scale. The 35 items can be classified as follows: physical functioning: 10 items; role functioning (physical): 4 items; physical pain: 2 items; general health perception: 5 items; vitality: 4 items; social functioning: 2 items; role functioning (psychological): 3 items; and emotional well-being: 5 items.

This is a scale for quantifying the QOL of individual renal disease patients, and high scores indicate a high level of health. The score range is 0 to 100. This is a scale that demonstrates reliability and validity[6].

②Relationship with duration of diabetic nephropathy treatment

This was the duration of treatment after the relevant patients had recognized that he/she had diabetic nephropathy. The patients gave their answers in terms of months or years, which were then converted to years.

3) Survey procedure

The researchers presented the study protocol to the heads of the hospital and nursing department at each clinical institution, and obtained their consent with respect to the research field. The researchers then explained about the research to the head physician and head of the nursing personnel at the blood purification center, and ascertained their cooperation with respect to the precise methods of patient selection and data collection.

At the institutions the cooperation of which had been ascertained, the researchers had the attending physician or nurse introduce prospective participants, who were then asked to participate in the survey. The researchers gave the prospective participants both written and oral explanations about the research methods, survey methods, time needed for the survey, and ethical considerations, and obtained their written consent. The questionnaire-based surveys were divided between 2 days for each participant, on dates convenient for the participant, and were carried out during dialysis.

4. Ethical considerations

The researchers explained the following points to all prospective participants, using documents, and obtained signatures indicating their consent: (i) participation in the survey was to be on the basis of the participants' free will; (ii) prospective participants would suffer no disadvantages of any type with respect to treatment, irrespective of whether or not they agreed to cooperate with the survey; (iii) participants would be free to withdraw from the survey at any time; (iv) the survey results would not be used for any purpose other than research; (v) all data were to be anonymized and to be managed in a rigorous manner; and (vi) full consideration was to be given to privacy so that individual patients would not be identifiable. It was also explained that, if there were items to which the participant did not wish to reply, this being an interview-based survey, he/she would not have to reply to these. This research was approved by the Medical Ethics Committee of Kanazawa University (Receipt no. Ho-134).

5. Analysis methods

The participants' fundamental information was handled as descriptive statistics. Whether or not the psychological construct for the "Belatedly convincing oneself of having worked hard to take care of oneself" medical-care perception consisted of three items was determined by factor analysis, and for those items the reliability coefficient was confirmed in terms of the positivity scale. In terms of the validity of the scale, this was tested using the GSES scale and the Pearson product-moment correlation coefficient. With respect to the characteristics of the positivity scale, QOL was obtained using the KDQOL-SF™1.3 scale, and its correlation with duration of diabetic nephropathy treatment was obtained using the Pearson product-moment correlation coefficient. In the test of the correlation coefficient, missing values were excluded from individual lists. The statistical analysis software used was SPSS Ver18.

Results

1. Participants' backgrounds

The details of patients' backgrounds are shown in Table 3. The number of patients asked to

Table 3. Patient's backgrounds

Age, mean ± SD (years)	67.0 ± 9.5		
Sex, n (%)	Male: 51 (72.9)	Female: 19 (27.1)	
Diabetes onset at each decade of age (n)	20s: 8	30s: 17	40s: 24
	50s: 9	60s: 4	70s: 2
Duration of out-patient diabetes treatment, mean ± SD (years)	16.3 ± 9.5	Not known (n): 19	
Other chronic complications (n)	With retinopathy and neuropathy: 70		
Duration of dialysis, mean ± SD (years)	4.5 ± 4.1		

SD: Standard deviation

Table 4. Medical-care perception of diabetic renal failure patients: Factor composition

Factor name	Item	Factor				
		Ⅰ	Ⅱ	Ⅲ	Ⅳ	Ⅴ
Factor Ⅰ	11. I was not concerned even when told that the complications of diabetes were progressing.	.975	−.043	−.040	−.203	−.119
	12. However much I worry about my diabetic condition, it will make no difference, so I try to forget about it.	.565	.026	.022	.154	.042
Factor Ⅱ	10. When I was told that dialysis might be necessary, I was surprised that the condition had progressed without me realizing.	.066	.993	−.086	−.068	−.271
	8. I suppose I could have done a bit more to avoid needing dialysis.	−.099	.417	.146	−.022	.278
Factor Ⅲ	3. My lifestyle has been restricted by diabetic nephropathy, so my lifestyle while undergoing dialysis may be easier.	−.064	.069	.944	.357	.085
	1. Once treatment for diabetes had been initiated, I did everything I could.	−.001	−.011	.648	−.273	−.107
	2. As a result of my own efforts, initiation of dialysis was put off longer than expected.	−.072	−.174	.335	−.265	−.244
Factor Ⅳ	5. Other important matters took priority, and I did not .take appropriate treatment.	149	.128	.038	.731	.047
	6. Of course, the need for dialysis is due to my own lifestyle, which I myself am now disgusted about.	.041	.049	−.265	.584	−.155
	4. I fully understand self-care behavior that led to the complications.	−.048	.043	.086	.510	−.086
Factor Ⅴ	9. When my diabetes treatment started, treatment methods were not very advanced.	−.125	−.147	−.098	−.093	.687
	7. I regret that my behavior has made dialysis necessary, but at that time I had no choice.	−.135	−.101	−.086	.382	−.437
Factor contribution rate (%)		12.46	10.47	11.17	16.12	6.56
Factor cumulative contribution rate (%)		12.46	22.93	34.10	50.22	56.78
Factor correlation	Ⅰ	1.00				
	Ⅱ	.03	1.00			
	Ⅲ	−.24	.02	1.00		
	Ⅳ	.09	.05	−.18	1.00	
	Ⅴ	−.09	.13	−.02	−.16	1.00

participate in the survey was 72, of whom 70 agreed to participate. All 70 patients were asked questions about fundamental information, and medical-care perception with respect to diabetic renal failure; 69 were assessed using the GSES, with 1 being withdrawn because of decreased blood pressure; and 65 were assessed using KDQOL-SF™1.3, with 5 withdrawing at their own request.

2. Items in the positivity scale for diabetic renal failure patients, and their internal consistency

Confirmation by factor analysis was carried out for the 70 patients who responded to questions

about the 12 items in the psychological construct for the "I will overcome my regrets" medical-care perception of the renal failure patients with type-2 diabetes, reached by inductive reasoning. The factor analysis was carried out by the generalized least-squares method, and the per-million method with Kaiser normalization. The value of each resulting factor was the result of an overall judgment based on the eigenvalue, contribution rate, and interpretability, and five factors and 12 items were selected for use. The loading of all factors was at least 0.30. The data compatibility for these five factors was favorable [$\chi^2(16)=10.8$; $p=0.83$]. Validity was shown for these samples, with a validity measurement of 0.55, and the cumulative contribution rate for the five factors was 56.78%. The outcome was that the three items in the scale in this research were factors, and these were the same items as in the results of the qualitative research (Table 4). These factors met the criteria for Factor III, and it was confirmed that these three items were the same as the three items obtained by inductive reasoning. For the three items, Cronbach's α-coefficient was 0.70, and their internal consistency was confirmed.

3. Relationship between positivity scale for diabetic renal failure patients and GSES

A significant positive correlation ($r=0.322$; $p=0.007$) was found between the positivity scale for diabetic renal failure patients and GSES.

4. Characteristics of the positivity scale for diabetic renal failure patients

1) Correlation with KDQOL-SFTM1.3 (Table 5)

The following five items showed significant positive correlations with the positivity scale for the diabetic renal failure patients: social functioning ($r=0.367$; $p=0.003$); emotional well-being ($r=0.343$; $p=0.005$); general health perception ($r=0.317$; $p=0.010$); burden of kidney disease ($r=0.263$; $0=0.035$); and sleep ($r=0.262$; $p=0.035$). In the sub-scale for sexual function, many of the responses were handled as missing data, and this sub-scale was therefore excluded.

2) Correlation with duration of diabetic nephropathy treatment

(1) Duration of diabetic nephropathy treatment

The number of participants who had no cognition of the duration of diabetic nephropathy treatment was 24 (34.3%); and the number who had been treated for less than 1 year was 15, these two groups making up 57.1% of the total. The numbers of participants who had been treated for longer periods were as follows: 1 to 2 years: 13 (18.6%); 2 to 3 years: 7 (10.0%); 3 to 5 years: 3 (4.3%); and more than 5 years: 7 (10.0%).

(2) Correlation with duration of diabetic nephropathy treatment

For diabetic renal failure patients, a significant positive correlation ($r=0.350$; $p=0.003$) was found between the positivity scale and the duration of diabetic nephropathy treatment.

Discussion

1. Significance of the positivity scale for diabetic renal failure patients

All diabetic nephropathy patients had some sort of regret about their current conditions. Among

Table 5. Correlation between positivity scale for diabetic renal failure patients and KDQOL-SF^{TM}1.3

n=65

Sub-scale of KDQOL-SFTM 1.3	Positivity scale for diabetic renal failure patients
Physical functioning	.195
Role functioning: Physical	.225
Bodily pain	.088
Social functioning	.367**
General health perception	.317*
Vitality	.033
Role functioning: Psychological	.120
Emotional well-being	.343**
Symptoms	.115
Effects of kidney disease	.181
Burden of kidney disease	.263*
Work status	.049
Cognitive function	.234
Quality of social interaction	.219
Sleep	.262*
Social support	.007
Encouragement from dialysis staff	−.038
Patient's satisfaction with dialysis care	.052
Overall health evaluation	.087

*$p<0.05$; **$p<0.01$

KDQOL-SF^{TM}1.3 was used, this being composed of a scale specific to renal disease, and a comprehensive scale (SF-36v2^{TM}).

the types of regret, the "Belatedly convincing oneself of having worked hard to take care of oneself" medical-care perception involves a positive acceptance of the current state in which dialysis has become necessary, and thus, despite regrets, involves a positive view of the patient's behavior up to that time, and, considering that it may result in a relatively high QOL, a scale was prepared for this. A positive correlation was found between the prepared scale and GSES, and concurrent validity was confirmed.

In addition, the result of an investigation as to the significance of high scores on this scale, using KDQOL-SF™1.3, was that positive correlations were found with respect to social functioning, emotional well-being, general health perception, sleep, and burden of kidney disease. It was confirmed that higher scores on the positivity scale for diabetic renal failure patients indicated higher self-efficacy, and also having a positive perception of health with respect to social functioning, emotional well-being, general health perception, sleep, and burden of kidney disease.

The following characteristic has been reported for diabetic nephropathy patients:

This condition involves psychological problems from before initiation of dialysis. Numerous patients shut their eyes to their own diabetic condition, avoiding thinking about it, and not recognizing its seriousness. Patients who reach the state of requiring dialysis often talk about their feelings of regret, saying that they have failed at so much in life, and are unable to see their lives in other than negative terms[7].

There are certain characteristics with respect to the personalities of diabetic nephropathy patients, and it is said that, in the clinical environment, these patients tend to be selfish, and difficult to deal with[8]. There have been reports that diabetic nephropathy and renal failure patients tend to stand out as more difficult and unpleasant than other dialysis patients[9]. The point common to these reports is that diabetic renal failure patients have psychological problems, and are unable to accept their current situations. However, in the present research, higher scores on the positivity scale on the part of diabetic renal failure patients meant that they were able to accept their lives up to that point in positive terms, and had forward-looking medical-care perceptions even after initiation of dialysis. Patients tend to regret that they did not live in a manner appropriate to being diabetic from as soon as they were aware of having the disease, and thus developed complications. However, if diabetic renal failure patients have positive feelings, this can result in greater emotional well-being, and general health perception, and lower burden of kidney disease, enabling psychological stability to be achieved. This is thought to mean that the relevant patient is able to feel that, despite dialysis having been initiated, on the basis of his own experience, which is what he/she can best rely on, he/she had achieved executive behavior with respect to the diabetes, in terms of "rational anticipation" as defined by Bundura[10]. For these reasons, it can be seen to be preferable for type-2 diabetes patients with whom dialysis has been initiated to be able to have the perception, despite developing complications, that "Belatedly convincing oneself of having worked hard to take care of oneself".

2. Positive perception and recognition of duration of diabetic nephropathy treatment by diabetic renal failure patients

Regular quantitative urinary albumin tests are recommended for early detection of diabetic nephropathy, but the proportion of diabetes patients with whom these tests are carried out has been reported to be low[11]. In addition, early detection, at the microalbuminuria stage, is difficult, and the current situation is that dialysis is usually initiated immediately after diagnosis of nephropathy.

It has been reported that, even if diabetic nephropathy is diagnosed at an early stage, patients do not fully acknowledge diabetic complications as a matter for their own concern[12-13]. There have also been reports of patients who could not remember the disease name[14-15], and had no understanding of the relevance of dialysis to themselves[16], even after having been notified about a diagnosis of early-stage nephropathy.

These reports illustrate the fact that it is difficult to provide appropriate treatment for diabetic nephropathy patients, in relation to their own understanding of the situation. Furthermore, although there have been recent reports from follow-up studies of maintenance or remission being achieved by rigorous self-care of nephropathy[17], there is a tendency for physicians and nurses to regard a notification of diabetic nephropathy as particularly serious. Therefore they often express this diagnosis in an indirect and/or euphemistic manner, so as to avoid provoking psychological trauma.

In terms of the reasons why it is difficult to give clear notifications, physicians and nurses tend to consider that, when patients reach the state of advanced diabetic complications, placing yet more rigorous lifestyle restrictions on patients who have previously been unable to modify their self-care behaviors will decrease their QOL. In addition, in the case of patients who have been diligent and reliable with respect to self-care, it will be difficult to prevent disease progression by means of self management. As a result, physicians and nurses, by notice to the diabetic nephropathy, feel it difficult to recommend therapeutic lifestyle further. However, as the longer that diabetic renal failure patients recognize that they are being treated for diabetic nephropathy, the higher their positivity, it is considered that, if patients understand that they are being treated for diabetic nephropathy before initiation of dialysis, they can have favorable QOL even during the nephropathy treatment period, and after initiation of dialysis.

In order for the period of nephropathy treatment to be as long as possible, it is necessary for patients to be notified as soon as possible about their nephropathy, and, by means of regular confirmation, to ensure that they themselves are fully conscious about nephropathy treatment.

3. Application to nursing

It has been reported that diabetes patients with whom dialysis has been initiated have more complex psychological issues than non-diabetic dialysis patients, but it has been clearly shown to be possible for their medical-care perceptions to be positive. Therefore, in terms of application to nursing, the three items involved in this perception should be presented to patients before the onset of nephropathy, and support for therapeutic lifestyles should be provided.

In addition to the above, an increase in the length of time for which diabetic patients undergoing dialysis understand about their nephropathy treatment increases their positivity as diabetic renal failure patients. It is therefore considered that a wide range of physicians and nurses should be educated and enlightened about the need for patients to have lifestyles in which they are aware of the nephropathy from its onset, and that this is linked to physicians and nurses having the confidence to notify patients promptly about their nephropathy.

Limitations of this research

The present research consisted of a survey carried out in a single prefecture. Issues relating to diabetic nephropathy patients undergoing dialysis in Japan that were not clarified in this research will be investigated in future.

Conclusions

This research was an interview- and questionnaire-based survey carried out with 70 type-2 diabetes patients with renal failure. The survey questions were prepared as a positivity scale with respect to the psychological construct of the "Belatedly convincing oneself of having worked hard to take care of oneself" medical-care perception, which was the outcome of previous study obtained by inductive reasoning. The conclusions were as follows:

1. The responses by 70 type-2 diabetes patients with renal failure to questions about 12 items in the psychological construct of the "I will overcome my regrets" medical-care perception were analyzed by factor analysis, and the finding was that three of the items in the scale used in this research were factors, these being the same items as in the results of the qualitative research. For these three items, Cronbach's α-coefficient was 0.70, and internal consistency

was therefore ensured. In addition, this scale was established as having a positive correlation with self-efficacy.

2. With diabetic renal failure patients, QOL and the positivity scale showed significant positive correlations with the following items on the KDQOL-SF^{TM}1.3 scale: social functioning, emotional well-being, general health perception, burden of kidney disease, and sleep. The medical-care perception that "Belatedly convincing oneself of having worked hard to take care of oneself" meant that QOL was favorable even when dialysis had been initiated.
3. The positivity scale for diabetic renal failure patients is correlated with the duration of nephropathy treatment, and it is therefore essential to have a period of time during which patients recognize that they have diabetic nephropathy, and undergo treatment.

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2 型糖尿病性腎不全患者の肯定感尺度

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要　　旨

目的：帰納的に導き出した先行研究結果である、「遅ればせながらできるだけ頑張ったと納得する」療養認識の構成概念から糖尿病性腎不全患者の肯定感尺度を作成する。また、肯定感尺度とQOLおよび糖尿病性腎症療養期間との関係を明らかにする。
方法：２型糖尿病性腎不全患者70名に面接式質問紙調査を行った。質問は、【後悔を収める】療養認識の構成概念12項目であり、因子分析により、尺度とする３項目の構成を確認した。尺度の妥当性としてGSES尺度を用いて相関係数で検定した。療養認識の特徴は、QOLをKDQOL-SF^{TM}1.3尺度を用い、糖尿病性腎症療養期間との関係を相関係数を用いて導いた。
結果：肯定感尺度とする３項目は、質的研究結果と同様の項目で因子となった。３項目の内的一貫性による信頼性（α＝0.70）が確認された。また、自己効力感尺度と正の相関により併存妥当性があった。QOLについては、KDQOL-SF^{TM}1.3尺度において社会生活、心の健康、全体的健康感、腎疾患による負担、睡眠において有意な正の相関があった。糖尿病性腎症療養期間とも正の相関がみられた。
考察：「遅ればせながらできるだけ頑張ったと納得する」という療養認識が低いよりも高いほうが透析導入後もQOLが良好である。また、その療養認識を高く持つには、糖尿病性腎症として認識して療養する期間が必要と言えた。