Development of a self-management scale for the evaluation of behavior in daily life in patients with hypertension : an investigation of reliability and validity

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Original Article

Development of a self-management scale for the evaluation of behavior in daily life in patients with hypertension : an investigation of reliability and validity

Keiko Tsubota, Michiko Inagaki*

Abstract

　This study aimed to develop and examine the reliability and validity of a self-management scale for the evaluation of behavior in daily life in patients with hypertension. We conducted a questionnaire survey on 174 patients with hypertension who visited any of 4 hospitals in 2 Japanese prefectures on an outpatient basis. We created a draft scale on the basis of relevant literature that reported research on the influence of blood pressure on lifestyle. The analysis extracted 6 factors, including "eating," "exercise," "stress," "alcohol intake," "smoking," and "medications," which in turn comprised 39 items. The self-management scale comprises a common domain and a selection domain, the former comprising eating, exercise, and stress, which all patients with hypertension need to manage, and the latter comprising alcohol intake, smoking, and medication, which patients need to manage in concert with their lifestyle.

　The scale correlated with the self-care agency questionnaire, suggesting criterion-related validity. Cronbach's α coefficient for the 6 subscales ranged from .67 to .82. The subscale items of eating, exercise, stress, and medications showed a relation with blood pressure; scores in the stable blood pressure group (systolic blood pressure ＜140 mmHg and diastolic blood pressure ＜90 mmHg) were higher than those in the high blood pressure group (systolic blood pressure ≧140 mmHg or diastolic blood pressure ≧90 mmHg) for each subscale. The scores for the smoking subscale showed a negative correlation with the number of cigarettes consumed per day.

　To summarize, the scale constructed is reliable and valid, and the scale items represent model behavior with regard to stabilization of blood pressure in patients with hypertension.

Key words

patients with hypertension, self-management, scale development, reliability, validity

Introduction

　Hypertension affects almost 40 million people in Japan, placing them at a higher risk for cardiovascular diseases[1]. It is important to control the blood pressure for hypertension because the complications of hypertension lead to a reduced lifespan and lower quality of life.

　Essential hypertension shares about 90% of all hypertension cases and is associated with individual lifestyle, i.e., behavior in daily life[1].

　Accordingly, it is necessary for patients with hypertension to follow certain behavioral patterns in daily life to maintain a stable BP. However, according to the research on BP in patients with hypertension, approximately half have been classified as having high BP[2,3]. These reports imply that half the patients with hypertension are unable to self-manage their behavior appropriately in daily life.

　Past research regarding lifestyle presented

Division of Health Sciences, Graduate School of Medical Science, Kanazawa University
＊School of Health Sciences, College of Medical, Pharmaceutical and Health Sciences, Kanazawa University

increasing evidence that the management of BP in patients with hypertension was associated with lifestyle modifications, including eating[4-7], exercise[8-11], stress management[12-18], reducing alcohol intake[19,20], and smoking[21,22]. However, research on the techniques of adopting a healthy lifestyle is lacking. Patients with hypertension need an evaluation scale to measure self-management behavior as a lifestyle modification. Self-management is the key to the development of a suitable lifestyle in patients with hypertension, and a scale would be a basis for the stabilization of BP in these patients. There were some scales for patient with hypertension until now[23,24], but they had few items and didn't contain the contents that we considered necessary. Therefore we thought to need a new scale described "appropriate behavior" for self-management of patients with hypertension.

In the past, authors reported a paper in 2005: development of an instrument to measure the self-care of outpatient with hypertension[25]. The scale consisted of eating, exercise and stress fields for the common domain, all of which must be subjected to self-management by all patients with hypertension. But authors couldn't research alcohol intake, smoking and medications fields, requiring patients with a drinking and/or smoking habit and those who use antihypertensive medications to self-manage their lifestyle. In addition, subjects were outpatients in one university hospital, so we considered to be expanded the application of scale for general hospitals. If we examine these subjects, we think that the items of factors will be different from our previous research. Furthermore, our previous research did not confirm that scores of scale were related to BP. We tried to develop a new self-management scale in order to solve some problems mentioned above.

The purpose of this study was to develop a self-management scale for the evaluation of behavior in daily life for patients with hypertension.

Methods
We developed the scale according to process of scale making[26].

1. Scale draft creation and examination of content validity
From a review of the literature regarding lifestyle influence on BP, concepts of self-management for patients with hypertension were classified into 6 subscales: eating, exercise, stress, alcohol intake, smoking, and medications. Eating, exercise, and stress represent subscales within the common domain, all of which must be subjected to self-management by all patients with hypertension. On the other hand, alcohol intake, smoking, and medications represent subscales within the selection domain, requiring patients with a drinking and/or smoking habit and those who use antihypertensive medications to self-manage their lifestyle.

We described in our previous paper about concepts for common domain, literatures about concepts for selection domain are described below.

1) Alcohol intake: In a previous study, drinkers had a higher odds ratio for hypertension than did nondrinkers[19]. A reduction in alcohol intake was associated with a significant reduction in BP[20]. Quantity of alcohol intake recommended is $\leq$ 180 ml in sake per day or $\leq$500 ml in beer per day[1].

2) Smoking: Parikh et al reported that 796 individuals developed new-onset hypertension among 1717 smokers without hypertension. From this result, they concluded that cigarette smoking was significant predictor of hypertension[21]. A 14-year longitudinal study in male workers revealed that smoking was independently related to the onset of hypertension and systolic hypertension[22].

3) Medications: In the Japanese home-versus-office BP measurement evaluation (J-HOME) study[3], home BP levels were not adequately controlled among approximately 60% patients with essential hypertension receiving antihypertensive treatment. With regard to drug compliance, it has been observed that some patients with hypertension forget to take their medication or adjust the dosage at their own discretion[27].

In order to measure these concepts, we created items indicating desirable daily activities on the basis of data from above studies, and in common

domain, we adopted items of our previous research[25].

Researchers and specialists, including 3 doctors involved in medical examination of patients and 4 researchers involved in chronic nursing, evaluated this scale for content validity. These specialists assessed the relevance of the items and suggested revisions to the content of certain items.

The scale draft comprised the following 6 subscales that included 45 items: "eating" (9 items), "exercise" (8 items), "stress" (10 items), "alcohol intake" (6 items), "smoking" (5 items), and medications (7 items). Items were designed to be rated on a 4-point scale, indicating respondents' level of action in terms of following a desirable lifestyle (4 = agree, 3 = nearly agree, 2 = nearly disagree, and 1 = disagree). In this scale, higher scores indicate a better level of self-management.

2. Face validity

After creation of the scale draft and examination of content validity, we administered questionnaires to the participants in order to evaluate the adequacy and clarity of items. The eating, exercise, stress, and medications subscales involved 17 participants, whereas the alcohol intake and smoking subscales involved 10 participants. The response of some participants to the item "I cut down on high cholesterol foods" was "I don't know about high-cholesterol foods;" therefore, we added examples of such foods ("for example, eggs, fish eggs and internal organs, liver, fat from meat, etc.") to this item. With regard to smoking, some participants said "I can't quit smoking though I have talked with my co-worker about it;" therefore, we deleted the item "I have information on quitting smoking" because this did not connect with actually quitting smoking. Finally, 6 subscales covering a total of 44 items were adopted for the questionnaire: "eating" (9 items), "exercise" (8 items), "stress" (10 items), "alcohol intake" (6 items), "smoking" (4 items), and "medications" (7 items).

3. Subjects and data collection

One hundred and eighty-six hypertensive patients who were visiting 4 hospitals (two university hospitals and two general hospitals in 2 prefectures of Hokuriku region) were included. All patients were checked by the specialist to be able to do exercise. We handed the questionnaire and return envelope to participants after explaining the purpose of this study, and asked them to return their questionnaires anonymously. The contents of the survey were as follows: self-management scale for patients with hypertension, self-care agency questionnaire (29 items)[28] for criterion-related validity analysis, and participant characteristics, including sex, age, blood pressure levels at hospital in the morning, duration of disease, use of antihypertensive medications, drinking habits, smoking habits and the number of cigarettes consumed per day.

The study was conducted between October 2010 and February 2011.

4. Data Analysis

1) Selection of items

The items to be deleted were determined by a good – poor (G-P) analysis. For each subscale, the good groups showed above-average total scores, while poor groups showed below-average scores. We compared the scores of two groups for each item in each subscale and Mann-Whitney U-test was used to analyze.

2) Confirmation of validity

The factor structure of the scale was tested by a factor analysis. We assumed 3 factors as subscales for the common domain, eating, exercise, and stress. Criteria for deletion was a factor loading was < 0.4 Extraction of factors were used the principal component method and a promax rotation.

In the selection domain, which comprised alcohol intake, smoking, and medications, the factor analysis was tested by each subscale because the numbers of patients were different by individual subscale. Extraction of factors were used the principal component method.

With regard to criterion-related validity, we considered the concept of the self-care agency questionnaire as being similar to that of the self-management scale for patients with hypertension; therefore, we examined the relationship between the scale and the questionnaire by calculating Spearman rank- correlation coefficient.

According to known-groups technique, we examined self-management scores in two groups: the stable BP group (systolic BP＜140 mmHg and diastolic BP＜90 mmHg) and the high BP group (systolic BP ≧140 mmHg or diastolic BP ≧90 mmHg). We analyzed the self-management scores and mean age of two groups by Mann-Whitney U-test because BP tends to increase as we get old. Furthermore, we also analyzed the scores in two groups of patients passed over 1 year after diagnosis of hypertension based on the previous report[4].

Finally, we examined the relationship between the smoking scores and the number of cigarettes consumed per day as confirmation of validity in smoking field. Spearman rank- correlation coefficient was used in the analysis.

3）Reliability

Internal consistency of the scale was determined by calculating Cronbach's α coefficient for each subscale.

Statistical analyses were performed using the IBM SPSS Statistics 19 software package. Statistical significance was set at $p < .05$.

5. Ethical considerations

The purpose of the study was explained to all participants orally and in writing. They were informed that their anonymity would be guaranteed, their participation would be by their own free will, and refusal to participate would not result in any negative consequence. Approval for this study was obtained from the Kanazawa University Board of Medical Ethics Review.

Results

1. Patient background

The questionnaire was distributed to 186 patients, of whom 183 (98.4%) responded and 174 (95.1%) gave effective responses.

Table 1 shows patient backgrounds. The mean age of the patients was 63.7 ± 10.3 (range, 31‒85), and the mean duration of disease was 10.8 ± 10.0 years. Of the 174 patients, 166 (95.4%) were prescribed antihypertensive medications, 92 (52.9%) had an alcohol-drinking habit, and 26 (14.9%) had a smoking habit. Eighty-nine (51.1%) had a job. One

hundred and fifty-eight (91.3%) lived with family. Systolic and diastolic BP were ＜140 mmHg and ＜90 mmHg in 103 patients (59.2%), and ≧ 140 mmHg or ≧ 90 mmHg in 71 patients (40.8%). Mean systolic and diastolic BP of all patients were 134.6 ± 13.8 mmHg and 79.8 ± 10.9 mmHg, respectively.

2. Selection of items

We assessed the relevance of items by the G-P analysis. There was a statistical significance between the score of the good group and the poor group for items in eating, exercise, stress, alcohol intake and medications ($p < .01$). But one item in the smoking subscale was deleted because of lack of statistical significance.

Table1. Characteristics of Participants (N=174)

Characteristics	Number of respondents	Rate(%)
Sex		
Male	102	58.6
Female	72	41.4
Age mean 63.7±10.3		
＜50 years	14	8.0
50‒59 years	40	23.0
60‒69 years	64	36.8
≧70years	56	32.2
Duration of disease mean 10.8±10.0		
＜1 year	7	4.0
1‒4 years	58	33.3
5‒9 years	31	17.8
10‒19 years	41	23.6
≧20 years	35	20.1
unknown	2	1.2
Use of antihypertensive medications		
Yes	166	95.4
No	8	4.6
Alcohol-drinking habit		
Yes	92	52.9
No	82	47.1
Smoking habit		
Yes	26	14.9
No	148	85.1
Worker		
Yes	89	51.1
No	85	48.9
family		
Yes	158	90.8
No	15	8.6
unknown	1	0.6
Blood pressure levels		
mean systolic BP 134.6±13.8		
mean diastolic BP 79.8±10.9		
Systolic BP ＜140 and Diastolic BP＜90	103	59.2
Systolic BP ≧140 or Diastolic BP≧90 (mmHg)	71	40.8

3. Confirmation of validity

1) Factor structure of the scale

Firstly, the factor analysis was tested for the common domain. The deletion of one item in eating field with a factor loading of <0.4 and one item in stress field having 2 factors (stress and exercise) with a high factor loading were considered. In the result, 3 factors were extracted as subscales in the common domain. The composite scale explained 42.25% of total variance (Table 2). The first subscale, eating, comprised 8 items with a factor loading of .51-.80. The second subscale, exercise, comprised 8 items with a factor loading of .37-.87; 1 item with a factor loading of .37 was adopted because importance of drinking water in the exercise was recognized by some researchers.

The third subscale, stress, comprised 9 items with a factor loading of .44-.75. Correlations among subscales were as follows: between the first and second subscale ($r=.347$), between the first and third subscale ($r=.272$), and between the second and third subscale ($r=.277$).

Secondly, the factor analysis was tested for the selection domain and one factor in each field was extracted. The alcohol intake subscale comprised 4 items with a factor loading of .53-.84, accounting for 51.88% of variance. The smoking subscale comprised 3 items with a factor loading of .69-.92, accounting for 66.61% of variance. The medications subscale comprised 7 items with a factor loading of .48-.87, accounting for 47.53% of variance (Table 3).

Table 2. Factor analysis of self-management scale for patients with hypertension in common domain (N=174)

Factor/Item	Loading			Cronbach's α coefficient	
	Factor 1	Factor 2	Factor 3	subscale	overall
Factor 1 : eating					
1. I consume a reduced sodium diet.	.80	.28	.17		
2. I cut down on fatty foods and meat.	.76	.22	.20		
3. I take a little taste meal.	.74	.34	.23		
4. I cut down on high cholesterol foods, for example, eggs, fish eggs, internal organs of fish, liver, fats from meat, and other such foods.	.73	.34	.15	.82	
5. I take care to consume a meal that isn't likely to be overweight .	.68	.39	.29		
6. I cut down on high-salt foods, for example, pickles, fish boiled in soy sauce, ham, dried fish, and other such foods.	.68	.18	.03		
7. Vegetables and fish are a central component of my meals.	.67	.16	.35		
8. I cut down on snacks and soft drinks.	.51	.10	.18		
Factor 2 : exercise					
1. I exercise on a daily basis.	.30	.87	.28		
2. I research information on exercise therapy.	.29	.73	.20		
3. I do aerobic exercises, for example, brisk walking, swimming, cycling, radio calisthenics, and other such exercises.	.25	.72	.22		.85
4. I exercise in a room when weather conditions are poor.	.08	.70	.16	.78	
5. I try to walk without relying on car.	.31	.58	.14		
6. I feel refreshed after exercise.	.15	.58	.09		
7. I measure my pulse during exercise.	.17	.41	.05		
8. I drink water during and after exercise.	.25	.37	.20		
Factor 3 : stress					
1. I maintain a balance between work (housework) and relaxation.	.25	.28	.75		
2. I rest when I feel tired.	.10	.19	.74		
3. I put on a jacket when I feel cold out of the house.	.18	.14	.64		
4. I have friends and family that I can talk to and confide in my troubles.	.06	.10	.58		
5. I get enough sleep.	.15	-.05	.54	.73	
6. I take bath with lukewarm water (38-40℃).	.11	.20	.50		
7. I warm up the bathroom and dressing room before I get into the bath.	.20	.34	.47		
8. I lead a well-controlled life.	.21	.07	.45		
9. I find out information on the effects of bathing conditions on blood pressure.	.27	.35	.44		
Eigenvalue	5.75	2.48	2.34		
Percentage variance explained %	22.98	9.92	9.35		
total variance explained %	22.98	32.90	42.25		

the principal component method and a promax rotation

Table 3. Factor analysis of self-management scale for patients with hypertension in selection domain

Factor/Item	Loading	Cronbach's α coefficient
Factor ： alcohol intake (N=92)		
1. I consume alcohol ≦180 ml in sake or ≦500 ml in beer per day.	.84	
2. I create an environment where I don't drink too much.	.78	.67
3. I fix the amount of alcohol I consume each day.	.70	
4. I give my liver rest ≧1 day every week.	.53	
Eigenvalue	2.08	
Percentage variance explained %	51.88	
Factor ： smoking (N=26)		
1. I create an environment where I don't smoke too much.	.92	
2. When I feel like smoking, I opt for other alternatives, for example, stretching, mild exercise, drinking tea or water, chewing a stick of gum, deep breathing, brushing my teeth, etc.	.85	.70
3. I fix the number of cigarettes I consume per day.	.69	
Eigenvalue	2.00	
Percentage variance explained %	66.61	
Factor ： medications (N=166)		
1. I adhere to the dosing instructions, that is, the number of times and dose.	.87	
2. I take my medicine even if my blood pressure is stable.	.82	
3. I don't forget to take my medicine.	.79	
4. I follow the directions for use, that is, taking medicine with a glass of water or dissolving it in the oral cavity.	.65	.78
5. I create an environment where I don't forget to take my medicine.	.59	
6. I can judge when I should take my medicine if I have forgotten to take it on time.	.53	
7. I can go to the hospital or telephone the hospital as early as possible if symptoms appear.	.48	
Eigenvalue	3.33	
Percentage variance explained %	47.53	

the principal component method

Table 4. Relationship between the scores of each subscale in the self-management scale and the scores of the self-care agency questionnaire

subscales	Common domain (N=174)			Selection domain		
	eating	exercise	stress	alcohol intake (n=92)	smoking (n=26)	medications (n=166)
mean score±SD	22.7±4.8	19.3±4.6	25.4±4.3	10.4±3.1	7.0±2.3	24.3±3.4
Correlation coefficient	.38**	.40**	.58**	.41**	.52*	.49**

Correlation coefficient =Spearman rank- correlation coefficient
*p＜.05, **p＜.01
The perfect scores of six parameters are as follows, eating：32, exercise：32, stress：36, alcohol intake：16, smoking：12 and medications：28.

2) Criterion-related validity

Spearman rank- correlation coefficient between the scores of each subscale in the self-management scale and the scores of the self-care agency questionnaire were as follows: "eating," $r=.38$; "exercise," $r=.40$; "stress," $r=.58$; "alcohol intake," $r=.41$; "smoking," $r=.52$; and "medications," $r=.49$. All showed a significant positive correlation ($p<.05$) (Table 4).

3) Relationship between the self-management scale scores and BP

Scores in the stable BP group were higher than those in the high BP group for eating, exercise,

stress and medications fields ($p<.05$) (Table 5, 6). However, there was no significant difference in the alcohol intake and smoking fields (Table 6).

4) Relationship between the smoking subscale scores and the number of cigarettes consumed

The average number of cigarettes consumed daily per smoker was 19.3 (range, 8-40). Spearman rank- correlation coefficient between the total smoking subscale score and the number of cigarettes consumed was −.63 ($p<.01$), and the correlation coefficient between the score for each item in the smoking subscale and the number of cigarettes consumed was between −.44 and −.54

Table 5. Relationship between the self-management scale scores and BP in common domain (N=165)

blood pressure	eating	exercise	stress
stable BP (n=97, age 64.3 ± 9.7)	23.4 ± 4.7 ⎤ *	19.9 ± 5.0 ⎤ **	25.9 ± 4.4 ⎤ *
high BP (n=68, age 62.7 ± 11.2)	21.6 ± 4.9 ⎦	18.3 ± 3.9 ⎦	24.7 ± 3.9 ⎦

Subjects: duration of disease is ≧1year.
Mann-Whitney U-test , *p <.05, **p <.01
The perfect scores of three parameters are as follows, eating: 32, exercise: 32 and stress: 36.

Table 6. Relationship between the self-management scale scores and BP in selection domain

blood pressure	alcohol intake	smoking	medications
stable BP	10.4 ± 3.13 (n=45, age 63.0 ± 10.6)	7.4 ± 2.16 (n=10, age 59.7 ± 8.2)	24.9 ± 3.11 (n=94, age 64.1 ± 9.8) ⎤ *
high BP	10.2 ± 3.13 (n=43, age 63.1 ± 10.7)	6.8 ± 2.37 (n=14, age 58.5 ± 9.2)	23.5 ± 3.70 (n=64, age 63.2 ± 10.9) ⎦

Subjects: duration of disease is ≧1year.
Mann-Whitney U-test , *p <.05
The perfect scores of three parameters are as follows, alcohol intake: 16, smoking: 12 and medications: 28.

($p<.05$) (Table 7).

4. Reliability

Cronbach's α coefficient for the overall scale in the common domain was .85, and for each subscale, it was as follows: "eating," .82; "exercise," .78; and "stress," .73 (Table 2). Cronbach's α coefficient for the subscales in the selection domain was as follows: "alcohol intake," .67; "smoking," .70; and "medications," .78 (Table 3).

Discussion

The validity and reliability of the scale were established from the evaluation of content validity, construct validity, criterion-related validity, and internal consistency. Furthermore, there was a significant difference between the scores of the stable BP group and those of the high BP group, and in eating, exercise, stress and medications subscales. This result indicates validity of the scale and suggests that if patients with hypertension follow the scale's lifestyle recommendations, their BP will remain stable. BP tends to increase because of the arterial sclerosis as we get old. However, it was suggested that we could lead to stabilize BP in the elderly people because there was not significant difference between the stable BP group and high BP group in all subscales.

Scores for the alcohol intake subscale had no relationship with BP, and we consider that this may be because alcohol intake has a J- or U-shaped

Table 7. Relationship between the smoking subscale scores and the number of cigarettes consumed per day (N=26)

	correlation coefficient
item 1	−.44*
item 2	−.54**
item 3	−.44**
total	−.63**

Spearman rank- correlation coefficient
*p <.05, **p <.01

association with BP level[29,30]. However, it was thought that we could develop the self-management scale according to process of scale's making.

Scores for the smoking subscale also showed no relationship with BP. This may be because smoking just prior to BP measurement causes increasing in BP[31]. Therefore we examined the relationship between the smoking scores and the number of cigarettes consumed per day and could confirm the validity in smoking subscales. Accordingly, we consider that items in the smoking subscale indicate behavior aimed at reducing the level of smoking.

The new scale formulated here is therefore reliable and valid, and the scale items represent model behavior with regard to stabilization of BP in patients with hypertension.

In our previous research, we could not evaluate exactly because the patients might overestimate or underestimate based on self-questionnaire. In this research, we think to resolve this problem that

we could clear the relationship between scale score and BP. We thought that we could evaluate the validity of this scale by using BP levels in a unified situation because we utilized BP levels at hospital in the morning.

The scales for the patients with chronic disease and hypertension had been made until now[23-25]. It is thought that our scales were proper because the concepts of six scales in this research resembled those of the past scales for hypertension. In addition, the self-care agency questionnaire for patients with chronic disease emphasized "self-care agency". On the other hand, our self-management scale emphasizes "behavior in lifestyle for stabilizing BP" because patients with hypertension need behavior in daily life for control BP. Therefore we consider that we can support to patients with hypertension sufficiently by using both this self-management scale and the self-care agency questionnaire.

This scale has a possibility of application to general hospitals in Japan and foreign country because the concepts of six scales in this research resemble those of the past scales for hypertension. However, researchers have to correct the content of items in this scale if they try to research in different lifestyle region. In addition, subjects in this research are patients that are able to do exercise, but we think the subscales except exercise field have a possibility of application to patients that are unable to do exercise.

Conclusions

A self-management scale for the evaluation of behavior in daily life in patients with hypertension was formulated.

1. The scale comprised 6 subscales and 39 items: eating (8 items), exercise (8 items), stress (9 items), alcohol intake (4 items), smoking (3 items), and medications (7 items).
2. The scale correlated with the self-care agency questionnaire, suggesting criterion-related validity. Cronbach's α coefficient for the 6 subscales ranged from .67 to .82.
3. Items in the eating, exercise, stress, and medications subscales showed a significant

relationship with BP. There was a significant relationship between the items in the smoking subscale and the number of cigarettes consumed per day.

The new scale formulated here is reliable and valid, and its items represent behavior appropriate for stabilizing BP in patients with hypertension.

Limitations of the study

There are two limitations in this research. Firstly, the numbers of subjects were small in smoking and alcohol drinking fields. Secondly, in this research, we could review selection domains which we didn't research in our previous report but we could only analyze in individual scales and not analyze in total scales because the numbers of patients were different by individual subscale.

Acknowledgments

References

1) The Japanese Society of Hypertension: Guidelines for the management of hypertension, Life Science Publishing, pp1-36, 2009
2) Hozawa A, Ohkubo T, Kikuya M, et al: Blood pressure control assessed by home, ambulatory and conventional blood pressure measurements in the Japanese general population: the Ohasama study. Hypertens Res 25: 57-63, 2002
3) Ohkubo T, Obara T, Funahashi J, et al: Control of blood pressure as measured at home and office, and comparison with physicians' assessment of control among treated hypertensive patients in Japan: first report of the Japan home versus office blood pressure measurement evaluation (J-HOME) study. Hypertens Res 27: 755-763, 2004
4) He FJ, MacGregor GA: Effect of modest salt reduction on blood pressure: a meta-analysis of randomized trials. Implications for public health. J Hum Hypertens 16: 761-770, 2002
5) Midgley JP, Matthew AG, Greenwood CMT, et al: Effect of reduced dietary sodium on blood pressure: a meta-analysis of randomized controlled trials. JAMA

275: 1590-1597, 1996

6） Sacks FM, Svetkey LP, Vollmer WM, et al: DASH-Sodium Collaborative Research Group. Effects on blood pressure of reduced dietary sodium and the dietary approaches to stop hypertension (DASH) diet. N Engl J Med 344: 3-10, 2001

7） Geleijnse JM, Giltay EJ, Grobbee DE, et al: Blood pressure response to fish oil supplementation: metaregression analysis of randomized trials. J Hypertens 20: 1493-1499, 2002

8） Fagard RH: The role of exercise in blood pressure control: supportive evidence. J Hypertens 13: 1223-1227, 1995

9） Dickinson HO, Mason JM, Nicolson DJ, et al: Lifestyle interventions to reduce raised blood pressure: a systematic review of randomized controlled trials. J Hypertens 24: 215-233, 2006

10） Neter JE, Stam BE, Kok FJ, et al: Influence of weight reduction on blood pressure: a meta-analysis of randomized controlled trials. Hypertens 42: 878-884, 2003

11） Blumenthal JA, Sherwood A, Gullette ECD, et al: Exercise and weight loss reduce blood pressure in men and women with mild hypertension: effects on cardiovascular, metabolic, and hemodynamic functioning. Arch Intern Med 160: 1947-1958, 2000

12） Kario K, McEwen BS, Pickering TG: Disasters and the heart: a review of the effects of earthquake-induced stress on cardiovascular disease. Hypertens Res 26: 355-367, 2003

13） Schlusse YR, Schnall PL, Zimbler M, et al: The effect of work environments on blood pressure: evidence from seven New York organizations. J Hypertens 8: 679-685, 1990

14） Gottlieb DJ, Redline S, Nieto FJ, et al: Association of usual sleep duration with hypertension: the Sleep Heart Health Study. Sleep 29, 1009-1014, 2006

15） Tochikubo O, Ikeda A, Miyajima E, et al: Effects of insuffiecient sleep on blood pressure monitored by a new multi biomedical recoder. Hypertens 27: 1318-1324, 1996

16） The Eurowinter Group: Cold exposure and winter mortality from ischaemic heart disease, cerebrovascular disease, respiratory disease, and all causes in warm and cold regions of Europe. Lancet 349: 1341-1346, 1997

17） Nagaie T, Chisaki A, Nagahiro C, et al : Basic analysis of the physiological effects of hot bath for the development of the methods of safe bathing. Memoirs of school of health sciences, faculty of medicine, Kyushu University 2: 17-24, 2003 (in Japanese)

18） Kanda K, Tsuchiya J, Seto M, et al: Thermal condition in the bathroom in winter and summer, and physiological responses of the elderly during bathing. Jpn J Hyg 50: 595-603, 1995

19） Nakamura K, Okamura T, Hayakawa T, et al: NIPPON DATA90 Research Group. The proportion of individuals with alcohol-induced hypertension among total hypertensives in a general Japanese population. Hypertens Res 30: 663-668, 2007

20） Xin X, He J, Frontini MG, et al: Effects of alcohol reduction on blood pressure: a meta-analysis of randomized controlled trials. Hypertens 38: 1112-1117, 2001

21） Parikh NI, Pencina MJ, Wang TJ, et al: A risk score for predicting near-term incidence of hypertension: the framingham heart study. Ann Intern Med 148: 102-110, 2008

22） Dochi M, Sakata K, Oishi M, et al: Smoking as an independent risk factor for hypertension: a 14-year longitudinal study in male Japanese workers. Tohoku J Exp Med 217: 37-43, 2009

23） Lahdenperä TS, Wright CC, Kyngäs HA: Development of a scale to assess the compliance of hypertensive patients. Int J Nurs Stud 40: 677-84, 2003

24） Scisney-Matlock M: Reliability and validity of the Lifestyle Hypertension Cognitive Representations scale. ABNF J 9: 28-34, 1998

25） Tsubota K, Ueno E, Takama S: development of an instrument to measure the self-care of outpatient with hypertension. Journal of Japanese Society of Nursing Research 28: 73-80, 2005 (in Japanese)

26） Sugawara K: scales to measure the state of mindⅢ. Saiensusha, pp 397-406, 2001 (in Japanese)

27） Yano K: Suggestion for community nursing activity to support for self-care of hypertensive patients. The Journal of Kawasaki Medical Welfare Society 15: 295-302, 2005 (in Japanese)

28） Honjo K: Revision of the self-care agency questionnaire. J Jpn Acad Nurs Sci 21: 29-39, 2001 (in Japanese)

29） Criqui MH, Wallace RB, Mishkel M, et al: Alcohol consumption and blood pressure. The lipid research clinics prevalence study. Hypertens 3: 557-565, 1981

30） Gordon T, Kannel WB: Drinking and its relation to smoking, BP, blood lipids, and uric acid: the Framingham study. Arch Intern Med 143: 1366-1374, 1983

31） Uezono K, Sasaki H, Kawakasi T: Acute effect of cigarette smoking on blood pressure and pulse rate, and its phase-dependency. J Health Sci 15: 85-89, 1993

高血圧症患者の日常生活行動自己管理尺度の開発
―信頼性と妥当性の検討―

坪田　恵子，稲垣　美智子*

要　　旨

　本研究の目的は高血圧症患者の日常生活行動自己管理尺度の開発及び尺度の信頼性と妥当性の検討を行うことである。外来通院中の本態性高血圧症患者174名を対象に質問紙調査を実施した。血圧に影響する日常生活行動に関する文献を根拠として尺度原案を作成し、因子分析等により、＜食事＞＜運動＞＜ストレス＞＜飲酒＞＜喫煙＞＜服薬＞の6因子39項目が抽出された。食事・運動・ストレス管理は全ての高血圧症患者が管理を必要とする共通管理領域であり、飲酒・喫煙・服薬管理はライフスタイルに合わせてそれらの管理を必要とする者が使用できる選択管理領域である。本尺度と「慢性病者のセルフケア能力を査定する質問紙」との相関がみられ、併存的妥当性が確認できた。また、妥当性の検討として既知グループ法による本尺度と血圧との関係では、下位尺度の食事・運動・ストレス・服薬管理において血圧の安定群は高値群よりも自己管理得点が高いことが確認できた。さらに、喫煙管理では自己管理得点と喫煙本数との負の相関が確認できた。信頼性係数を示すCronbach's α係数は下位尺度において.67～.82を示した。

　以上より本尺度は信頼性と妥当性が認められ、高血圧症患者が血圧を安定化するための生活を送る上で尺度の項目を療養行動の目標とすることができると考える。