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A STUDY OF FACTORS ASSOCIATED WITH DIETARY SUPPLEMENT
CONSUMPTION IN MENOPAUSAL WOMEN

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Abstract : The purpose of the present study was to find factors associated with dietary supplement consumption in menopausal women, and to examine nursing support for maintaining and improving their health.

We surveyed menopausal women (aged 40–60 years) using an anonymous self-administered questionnaire. The relationship between dietary supplement consumption status and individual characteristics, menopausal symptoms, the perception regarding menopause, sense of self-efficacy, and health promotion behaviors (HPB) were examined. HPB were measured using the Japanese version of the Health-Promoting Lifestyle Profile (HPLP). Responses were obtained from 256 women (response rate: 67.9%). Of these, 187 responses were valid and were included in our data analyses.

Among the factors associated with dietary supplement consumption, we found significant correlations between the severity of menopausal symptoms, age, change in menstruation, surgical history, and the HPB items “participation in seminars” and “finding someone who can give advice.” Of these, the most significant independent variable was the severity of menopausal symptoms. These results suggest that menopausal women became concerned about their health when their menstruation status changed and started taking dietary supplements according to these symptoms. To support health maintenance and improvement in menopausal women, nurses should provide information regarding menopause before its onset, hold health classes, and establish a consultation office for menopausal women.

Key words : menopausal women, menopausal symptoms, dietary supplement, health promotion

I. Introduction

At present, perimenopausal women (aged 45–65 years) comprise the largest component in the Japanese population pyramid, accounting for approximately 17 million individuals¹⁾. The 2013 Annual Report of Women’s Health, Labour and Welfare²⁾ indicates that the working

population includes 15 million women aged 45–54 years, which is only slightly less than the 16 million women in the working population aged 25–34 years. Therefore, menopausal women constitute a core component of the population. Furthermore, in the context of the aging of the society, it is very important for women to lead healthy lives with a high quality of life (QOL) after menopause. Maebara³⁾ has stated that to have a high QOL during and after menopause, it is important to have the motivation to cope with the symptoms and stress of menopause; therefore, women should actively engage in health promotion behaviors (HPB)⁴⁾⁵⁾ to increase their sense of self-efficacy. It is believed that the environmental factors that affect the health of menopausal women include employment status, family life, and marital relationships. However, one of the ways in which many women maintain and improve their health is not by increasing physical activity or improving their diet but by taking dietary and health supplements⁶⁾. Most studies on menopausal women have principally examined factors associated with menopausal symptoms, such as symptoms and stress. Very few studies have examined the state of dietary supplement consumption from the perspective of HPB for menopausal women.

Therefore, we examined HPB status to find the factors linked to dietary supplement consumption in menopausal women. The present study aimed to (a) reveal the factors associated with dietary supplement consumption in menopausal women and (b) examine nursing support for maintaining and improving the health of such women.

II. Research methods

1. Survey subjects

Menopausal women (aged 40–60 years) from 2 prefectures in the Kinki region of Japan were included in our study.

2. Survey method

For our survey, anonymous self-administered questionnaires were distributed at workplaces and organizations and the responses were collected by post. Participants were provided a written request to participate in the study which clearly stated the purpose of the study, that participation was voluntary, that the questionnaire was anonymous with strict confidentiality to protect the anonymity of study participants, and that the data collected would not be used for any purpose other than the study. The return of responses by post indicated consent to participate in our study. The present study was conducted with the approval of the ethics committee of the affiliated universities.

3. Study framework

The present study examined the relationship of “taking dietary supplements” with “subject characteristics,” “menopausal symptoms,” “perception regarding menopause,” “sense of self-efficacy,” and “HPB.”

4. Definitions

1) Menopausal women: Women aged 40–60 years going through the transition from the fertile

to the infertile period.

- 2) Dietary supplements: Food and health supplements taken as one feels necessary to improve health and to treat nutrient deficiencies.
- 3) HPB of menopausal women: Behaviors for the amelioration of various menopausal symptoms as well as the active management of one's own health.

5. Survey content

1) Perception regarding menopausal symptoms and menopause

To ascertain the women's menopausal symptoms and how their husbands perceived them if they were married, we used Koyama's simplified menopausal index (SMI)⁷⁾. The maximum score for the index was 100 points; a 1 was assigned to "0-25 points: no abnormality," a 2 was assigned to "26-50 points: attention required in daily activities," a 3 was assigned for "51-65 points: mild menopausal disturbances," a 4 was assigned for "66-80 points: moderate menopausal disturbances," and a 5 was assigned for "81-100 points: severe menopausal disturbances." In addition, the participants were questioned about their recognition of the timing of menopause, their interest in the menopause, and their knowledge regarding menopause.

2) Sense of self-efficacy

To measure the general degree of sense of self-efficacy, we used the generalized self-efficacy scale (GSES) created by Sakano and Tohjoh⁸⁾.

3) Health promotion (HPB)

HPB were determined using the Japanese version of the Health-Promoting Lifestyle Profile 2 (HPLP II)⁹⁾. HPLP II, based on HPM proposed by Pender, consists of 6 areas of health-preserving behaviors associated with the maintenance and improvement of health, including "responsibility towards health," "exercise," "nutrition," "psychological improvements," "human relations," and "stress management"; the validity and reliability of this instrument has been previously proven. In the present survey, we used the area "responsibility towards health."

4) Subject characteristics

Subject characteristics in the question items surveyed included the age of the participating couple, number of children, employment status, care experience, and dietary supplement consumption status.

6. Analysis methods

Quantitative data were statistically analyzed, data was compiled using the spreadsheet software Microsoft Excel 2007 and statistical analyses were performed using the statistical analysis software IBM SPSS 20.0 J for Windows. After confirming normality, the basic characteristics and scores for each scale at baseline were compared between those taking

the dietary supplement and those who did not using a t-test and χ^2 test. Pearson's product-moment correlation coefficient was calculated to determine correlations, and Spearman's rank correlation coefficient was calculated to determine the ordinal scale. A *p* value of 5% was considered significant.

III. Results

Questionnaires were distributed to 377 women and responses were collected from 256 women (response rate: 67.9%). Of these, valid responses were obtained from 187 women and these were included in our data analyses (valid response rate: 49.6%).

1. Total results and analysis

1) Subject characteristics

Table 1. shows a summary of the subject characteristics and Table 2. shows the results of the evaluation scale.

Table 1. Summary of subject characteristics (n=187)

		Yes		No	
Age	Mean 49.53 ± 5.08 years				
Have children		177	94.7%	10	5.3%
Employment		113	61.0%	74	39.0%
Experience of caring for cohabitating family		15	8.0%	172	92.0%
Perception of own health status					
	Very healthy	24	12.8%		
	healthy	142	75.9%		
	Not very healthy	20	10.7%		
	not healthy	1	0.5%		
Smoking status					
	Smoker	15	8.0%		
	Nonsmoker	160	85.6%		
	Quit	12	6.4%		
Alcohol consumption status					
	≥3 days per week	49	26.2%		
	1-2 days per week	29	15.5%		
	Almost never	109	58.3%		
Dietary supplement consumption		79	42.2%	108	57.8%
Cost of dietary supplements 300-80,000 yen, mean: 5,272 yen					
BMI	Mean 21.55 ± 2.61				
	Underweight (<18.5)	21	11.2%		
	Normal weight (18.5-25.0)	145	77.5%		
	Obese (≥25.0)	21	11.2%		
Engaging in hobbies		100	53.5%	87	46.5%
Engaging in social activities		34	18.2%	153	81.8%

[±: standard deviation (SD)]

Table 2. Evaluation index results

Evaluation index	Mean	Min. value	Max. value
HPLP II	2.33±0.51	1.11	3.56
SMI total score	26.65±20.03	0	91
GSES total score	8.85±2.04	2	13

[±: standard deviation (SD)]

(1) Age

There were 39 women (20.9%) aged 40–44 years, 49 women (26.2%) aged 45–49 years, 61 women (32.6%) aged 50–54 years, and 38 women (20.3%) aged 55–60 years, with a mean age of 49.53 ± 5.08 years.

(2) Number of children

There were 177 women (94.7%) with children and 10 women (5.3%) without children. A total of 24 women (12.8%) had 1 child, 101 women (54.0%) had 2 children, 50 women (26.7%) had 3 children, and 2 women (1.1%) had 4 children, with the mean number of children being 2.05 ± 0.81.

(3) Employment status

There were 113 women (61.0%) who were employed, including 47 full-time employees (25.1%) and 66 part-time employees (35.3%); 74 women (39.6%) were unemployed. Of those unemployed, 29 women had stopped working after getting married and having children, and 9 women had stopped working after the age of 40.

(4) Cohabitation with family and experience of caring for a cohabiting family member

With regard to cohabitation with family, 144 women (77.0%) lived with their children accounting for approximately 80%, 23 women (12.3%) lived with their mothers-in-law, 10 women (5.3%) lived with their fathers-in-law, 4 women (2.1%) lived with their own mother, and 3 women (1.6%) lived with their own father. A total of 15 women (8.0%) had experienced caring for a cohabiting family member, and 172 women (92.0%) had no experience.

(5) Perception of own health status

The perception of their own health status according to their responses was “very healthy” for 24 women (12.8%), “healthy” for 142 women (75.9%), “not very healthy” for 20 women (10.7%), and “not healthy” for 1 woman (0.5%); there was a high ratio of women who perceived that they were healthy.

Health status was divided into a “healthy” group and a “not healthy” group. Upon performing a χ^2 test of general characteristics with a rank scale, a significant difference was only found with social activities (volunteer) ($p < 0.05$); there was no significant difference observed with the other characteristics.

(6) Smoking and alcohol consumption status

With regard to smoking status, 15 women (8.0%) were smokers, 160 women (85.6%) were nonsmokers, and 12 women (6.4%) had quit smoking. The mean age for quitting smoking was 35.31 ± 8.97 years, and 6 women (10.2%) had quit smoking after age the age of 40.

With regard to alcohol consumption status, 49 women (26.2%) consumed alcohol ≥ 3 days per week, 29 women (15.5%) consumed alcohol 1–2 times per week, and 109 women (58.3%) almost never consumed alcohol.

(7) Perception regarding menopausal symptoms

Menopausal symptoms were scored using SMI. The mean score of the total SMI scores was 26.13 ± 19.47 (0–91 points). The most common menopausal symptoms noticed were “decreased visual acuity” in 53 women (28.3%), “forgetfulness” in 33 women (17.6%), “shoulder stiffness, lower back, and leg pain” in 17 women (9.1%), “decreased ability to concentrate” in 14 women (7.5%), “irregular periods” in 14 women (7.5%), and “not feeling like doing anything” in 10 women (5.3%).

(8) Recognition of the timing of menopause, and awareness and knowledge regarding menopause

As a result of questioning women’s recognition of the timing of menopause, we found that 82 women (43.9%) thought that they were “currently going through menopause,” 26 women (13.9%) thought that they had “finished menopause,” 68 women (36.4%) thought that “menopause has not started,” and 11 women (5.9%) though that they had “no menopause.”

(9) Health-promoting behaviors (HPB)

The mean score for HPB measured using the HPLP instrument was as 2.24 ± 0.52 points (range 1.0–3.5 points). The HPB question items and response frequencies are shown in Fig. 1. The HPB items to which women most commonly responded “always” were “do you check your own health regularly (blood pressure and weight)? ” and “do you find someone who can give you advice when you are concerned?”, with 58 women responding “always” (31.0%). Fifty-three women (28.3%) answered “always,” and 113 women answered “sometimes” in response to “do you read articles and watch TV about health-related topics?”, constituting a total of 166 women (88.7%). Items to which women most commonly answered “never” or “rarely” included “do you participate in seminars on health management?”, with 105 women (56.1%) and 50 women (26.7%), respectively. “Do you try to become healthier or consult medical institutions?” was answered “never” by 102 women (54.5%), and “rarely” by 61 women (32.6%), comprising a total of 163 women (87.2%).

Furthermore, a weak correlation was obtained between the total scores for HPB and the menopause index and the total scores for HPB and sense of self-efficacy ($p < 0.05$).

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Table 3. Association with dietary supplement consumption status (n=187)

	Taking	Not taking	p value
Age			0.113
40-44 years	12	27	
45-49 years	15	34	
50-54 years	29	32	
55-59 years	23	15	
Medical history			0.115
With	4	12	
Without	75	96	
Degree of menopausal symptoms			0.001
No abnormality	35	60	
Attention to daily activities	21	41	
Mild menopausal disturbance	17	5	
Moderate menopausal disturbance	5	1	
Severe menopausal disturbance	1	1	
Perception of own health status			0.485
Healthy	68	98	
Not very healthy	11	9	
Not healthy	0	1	
Menstruation status change			0.031
Regular	23	34	
Irregular	16	38	
Menopause	40	36	
Recent health check			0.206
Yes	4	4	
No	75	104	
Surgical history			0.023
Yes	2	12	
No	77	96	
Seeking someone who can give advice			0.027
Yes	16	16	
No	63	92	
Participation in seminars			0.022
Yes	16	16	
No	63	92	

χ^2 test

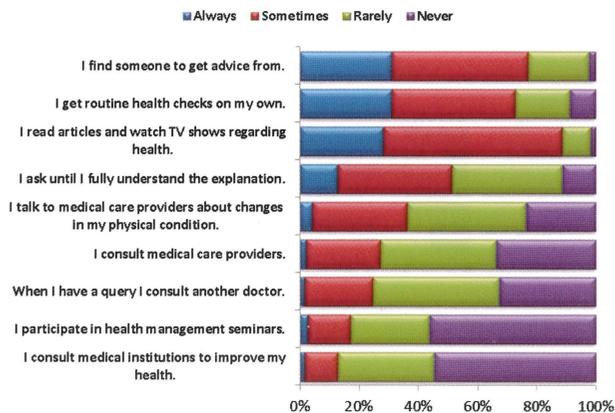


Fig. 1. Frequency of health-promoting behaviors

2. Factors related to dietary supplement consumption

The dietary supplement consumption status is shown in Fig. 2. Dietary supplements were being taken by 79 women (42.2%) and not taken by 108 women (57.8%). The dietary supplements that were most commonly taken were vitamins for 41 women (51.9%), followed by soy milk for 14 women (17.7%), and black vinegar for 14 women (17.7%) (Multiple responses allowed). Most often, women started taking dietary supplements after seeing them on television or in magazines (30 women, 16.0%), after recommendation by friends (23 women, 12.3%), after recommendation by husbands (5 women, 2.7%), and for other reasons (29 women, 15.5%). The most common reasons for taking dietary supplements were to prevent disease (40 women, 21.4%), to improve physical functioning (24 women, 12.8%), and to increase physical strength (15 women, 8.0%). The amount of money spent on dietary supplements ranged between 300–80,000 yen per month with a mean of 5,272 yen.

The reasons that women started to take dietary supplements are shown in Fig. 3. and the reasons for taking them are shown in Fig. 4. Furthermore, as a result of examining dietary supplement consumption status in terms of health status, we found that in the “very healthy” and “healthy” groups, 68 women (36.4%) were taking dietary supplements and 98 women (52.4%) were not, whereas in the “not very healthy” and “not healthy” groups 11 women (0.59%) were taking dietary supplements, and 10 women (5.3%) were not. There was no significant difference observed between health status and dietary supplement consumption status.

Factors associated with dietary supplement consumption (Table 3) included age, change in menstruation, surgical history, and the HPB items “participation in seminars” and “seeking someone who can give advice” ($p < 0.05$).

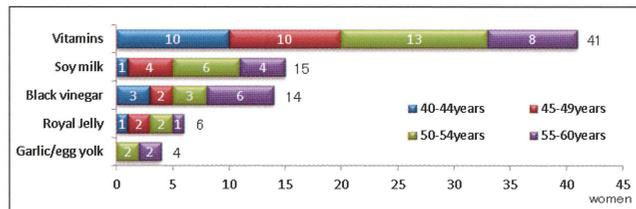


Fig. 2. Details of dietary supplements taken

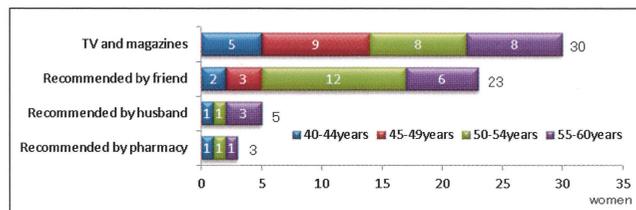


Fig. 3. Reason for starting to take dietary supplements

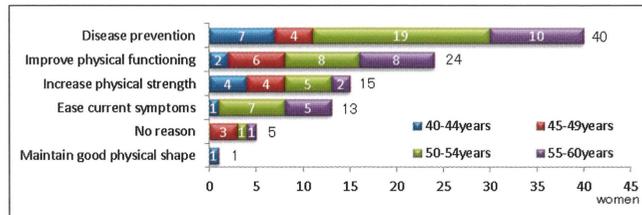


Fig. 4. Reason for taking dietary supplements

IV. Discussion

1. Factors associated with dietary supplement consumption in menopausal women

The HPB question item to which women responded “yes” with a frequency of >80% was “do you read articles and watch television about health?” Furthermore, approximately 10% of women responded “yes” to “do you participate in seminars on health management?” and “do you consult a medical institution to improve your health?” These 2 responses were associated with dietary supplement consumption. These results were also related to the fact that 166 women (88.8%) perceived that they were healthy, or that they did not take on any particular proactive health measures. Hiroi et al¹⁰ surveyed menopausal women and found that very few (7.7%) participated in seminars (multiple responses allowed). Menopause is a period that requires improvements in lifestyle and life environment, and is a perfect opportunity to undertake health-promoting behaviors¹¹. Education, such as participation in seminars and receiving health checks on one’s own, is needed to improve and maintain health during menopause.

Tanigaki et al¹² reported that men and women who received health checks were satisfied with their health because they had a high sense of self-efficacy; irrespective of their diagnosis, their high sense of self-efficacy implied that they could manage illness. In the present study, we found a low correlation between HPB and sense of self-efficacy ($p < 0.05$). We believed that the fact that our study participants actively responded to our questionnaire by post indicated that there were many women who had a high sense of self-efficacy; however, further studies will be needed to investigate the relationship between menopausal women and their sense of self-efficacy.

2. Orientation of nursing support

In the present study, we found that factors associated with dietary supplement consumption in menopausal women included age, change in menstruation, surgical history, and the HPB items of “participation in seminars” and “seeking someone who can give advice” ($p < 0.05$). These results suggested that for female health problem-solving and HPB, women needed to understand and improve their QOL; with the knowledge of how to go about this, what resources to use, and what targets to set, they should actively implement HPB. Furthermore, we believed that if there were a checklist that allowed women to ascertain their physical condition, they would be able to predict their future health. Also by regularly using such a checklist, these women would be able to make self-assessments of their health over time,

and ascertain any changes in their own body¹³⁾. In addition, the checklist would provide an opportunity for women to present their progress at health checkups, making it easier for them to voice their opinions and to take an active approach towards their own health.

To improve knowledge and raise awareness regarding menopause, further studies are needed to examine education methods through routine health checkups conducted on company employees, such as with the distribution of pamphlets and mini-health consultations. These results have therefore demonstrated that there was very little awareness regarding the existence of consulting medical institutions that can improve health. Medical institutions should put forward health support projects, make efforts to create a consultation-friendly environment, and in particular, appeal to public health centers to implement various events. Furthermore, it appears that encouraging women to participate in recreational clubs and social activities will provide them with more meaning in their life after menopause and lead to increased friendships.

3. Study limitations and issues

The present study covered, a small study sample of 187 participants and the analysis results were limited to data obtained from women residing in the Kinki region, which limited the generalization of our results. However, from the perspective of health promotion of menopausal women, there have been no studies that examined dietary supplement consumption in menopausal women; therefore, we do recommend further studies with a greater number of participants.

V. Conclusions

In the present study, we found that for menopausal women to lead healthy lives with a high QOL after menopause, it will be important to implement nursing support of menopausal women while taking into consideration the factors associated with the dietary supplement consumption of menopausal women.

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