

Convergence Relationships among Nutrition Knowledge, Health Beliefs, Self-efficacy, and Diet Management Behaviors in Persons with Hypertension in Sri Lanka

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스리랑카 고혈압 환자의 영양지식, 건강신념, 자기효능감, 식이조절행위의 융복합적 관계 연구

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Abstract This study aimed to identify the convergence relationships among nutrition knowledge, health beliefs, diet self-efficacy, and diet management behaviors among Sri Lankans with hypertension (HTN). 91 adults diagnosed with HTN for more than one year participated in this study. A set of interviewer-administered questionnaire was used to assess general characteristics, nutrition knowledge, health beliefs, diet self-efficacy, and diet management behaviors. A stepwise multiple regression analysis was conducted to identify the factors that might influence diet management behaviors. There were statistically significant positive correlations between nutrition knowledge ($r=0.26$, $p=.013$), health beliefs ($r=0.35$, $p=.001$), diet self-efficacy ($r=0.34$, $p=.001$) and HTN diet management behaviors. Three variables, nutrition knowledge, health beliefs, and diet self-efficacy, explained 19.9% of the variance in HTN diet management behaviors ($F=8.36$, $p=.001$). Diet self-efficacy was the most significant influencing factor ($\beta=.29$, $t=2.75$, $p=.007$), followed by nutrition knowledge ($\beta=.25$, $t=2.50$, $p=.014$). The findings of this study can be used as valuable data for developing effective interventions to improve diet management behaviors of persons with HTN.

Key Words : Hypertension, Diet, Behavior, Knowledge, Self-efficacy

요 약 본 연구의 목적은 스리랑카 고혈압 환자의 영양지식, 건강신념, 자기효능감과 식이조절행위와의 관련성을 파악하여 고혈압 식이조절행위를 개선하기 위한 효과적인 중재 프로그램 개발의 기초자료를 제공하기 위함이었다. 본 연구의 대상자는 스리랑카의 한 대학병원에서 고혈압으로 진단받은 91명의 환자를 대상으로 하였다. 수집된 자료는 IBM SPSS Statistics 20.0 프로그램을 사용하여 기술통계, t-test, one-way ANOVA, Pearson's correlation coefficient, step-wise multiple regression을 통해 분석하였다. 연구결과 대상자의 영양지식($r=0.26$, $p=.013$), 건강신념($r=0.35$, $p=.001$), 자기효능감($r=0.34$, $p=.001$)은 고혈압 식이조절행위와 유의미한 양의 상관관계가 있는 것으로 나타났다. 또한 영양지식($\beta=.25$, $t=2.50$, $p=.014$)과 자기효능감($\beta=.29$, $t=2.75$, $p=.007$)은 고혈압 식이조절행위에 영향을 미치는 주요 요인으로 나타났다. 본 연구결과를 바탕으로 스리랑카 고혈압 환자의 식이조절행위를 개선하기 위해서는 영양지식과 자기효능감을 고려한 융복합적 중재 프로그램 개발이 필요할 것으로 생각된다.

주제어 : 고혈압, 식이, 행위, 지식, 자기효능감

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1. INTRODUCTION

1.1 Background

With the increasing aging population growth, the number of persons with uncontrolled HTN has risen from 600 million in 1980 to nearly 1 billion in 2008 (World Health Organization [WHO]) [1]. The prevalence of uncontrolled hypertension (HTN) among the Sri Lankan HTN population was 41.1% [2]. The recent estimate of mortality due to cardiovascular disease (CVD) in Sri Lanka was higher than that observed in many high-income countries [2]. As CVD occurs primarily in the productive mid-life period, it seriously compromises the productivity of the workforce and adversely affects the country's economic development. Hence, it is urgently necessary to plan and develop effective strategies for preventing and managing HTN in Sri Lanka to reduce the related adverse outcomes.

Many studies have shown that dietary behaviors are important lifestyle factors in the development and management of HTN [3]. The Dietary Approach to Stop Hypertension (DASH) diet, which includes eating less salt, increasing fruit and vegetable intake, substituting fat-free or low-fat versions of dairy products, and eating whole grains, fish, poultry, beans, seeds, and nuts, is associated with lowering blood pressure [4]. Although the DASH diet plays an important role in lowering blood pressure, most Sri Lankans have not adopted such adequate diet management behaviors, and this may be associated with an increased prevalence of HTN among Sri Lankans [5]. A large proportion (82%) of Sri Lankan adults does not consume adequate amounts of vegetables, but they consume higher percentages of saturated compared to unsaturated fat [6]. Their daily intake of salt, added sugar, and starch was significantly higher than that recommended by the WHO [7]. Identifying the factors influencing the diet management behaviors of patients with HTN is necessary to plan

strategies for overcoming poor health diet patterns and decreasing the related adverse outcomes.

The increased availability of nutrition information has successfully enhanced healthy diet management behaviors. Elfhag et al. [8] observed that healthy eating behaviors increased with high nutrition knowledge, whereas Shaikh et al. [9] observed that low nutrition knowledge was an important barrier that influenced the low consumption of fruits and vegetables. Higher nutrition knowledge affects positive health beliefs and leads to healthy diet behaviors [10, 11].

Health beliefs, including perceived benefits and perceived barriers, play an important role in promoting diet management behaviors. Pires and Murssi [12] reported that health beliefs have a significant correlation with adherence to healthy diet patterns and are positive predictors of adherence to healthy diet management among hypertensive individuals. Pawlak and Colby [13] found that the intrinsic benefits of eating healthy foods, such as feeling better or being healthier, may help to improve health promoting diet management behaviors among African Americans.

Diet self-efficacy is an important influencing factor as well as the major motivator in performing diet management behaviors. Liou [14] reported that self-efficacy was significantly related to the dietary behaviors of Chinese Americans. Pawlak and Colby [13] also reported the high self-efficacy of eating healthy foods among their sample. Increased education seems to be positively related to enhanced individual self-efficacy, and increased self-efficacy promotes diet management behaviors.

In summary, information regarding nutrition knowledge, health beliefs, diet self-efficacy, and demographic factors may provide sufficient evidence for deciding the target groups who need the highest level of intervention. Although it is essential to understand the factors that may influence health behaviors in developing intervention plans, few studies have been conducted to examine dietary behaviors

among Sri Lankans [15]. Diet and nutrition surveys are important sources of necessary information regarding individuals' health status and disease risks [16]. However, insufficient data concerning Sri Lankan diet management behaviors may cause issues in planning successful interventions for managing the problem. It may be useful to conduct more studies that assess people's nutritional and dietary status and diet management behaviors to monitor the ongoing transitions of diet management behaviors and plan successful interventions.

1.2 Purpose

The purpose of this study was to assess the factors influencing Sri Lankan patients' HTN diet management behaviors. The specific objectives were: a) to assess the levels of nutrition knowledge, health beliefs, diet self-efficacy, and HTN diet management behaviors; b) to assess the differences in HTN diet management behaviors according to the subjects' general characteristics; c) to assess the relationships between nutrition knowledge, health beliefs, diet self-efficacy, and HTN diet management behaviors; and d) to examine the factors influencing Sri Lankan patients' HTN diet management behaviors.

2. METHODS

2.1 Study design

This study used a cross-sectional, descriptive, quantitative design in order to assess the factors influencing HTN diet management behaviors.

2.2 Setting and sample

The subjects of this study were adults, aged 18 years or older, who had an HTN diagnosis for more than one year and who voluntarily agreed to participate. The number of estimated subjects was calculated by using G-power analysis 3.0. At least 80

subjects were needed to perform a multivariate regression analysis with 3 predictors given a medium effect size of .15, a power of .8, and a significance level of $\alpha=0.05$. Considering the possibility of drop-outs, 100 patients were recruited for this study. The study was conducted in 4 medical clinics of one teaching hospital in Sri Lanka.

2.3 Ethical consideration

Institutional Review Board (IRB) approval was obtained (IRB reference number: 2-1041024-AB-N-01-20141211-HR-128), and the data collection approval was obtained from the Ethical Review Committee at one teaching hospital in Sri Lanka.

2.4 Measurements

2.4.1 General characteristics

General characteristics that might affect HTN diet management behaviors, including age, gender, marital status, ethnicity, education, occupation, income, and number of children, were assessed using the General Nutrition Knowledge Questionnaire [17] and the researcher's own questions, which were developed after reviewing the literature.

2.4.2 Nutrition knowledge

The subjects' nutrition knowledge was assessed with the General Nutrition Knowledge Questionnaire developed by Parmenter and Wardle [17]. It consists of 4 sections with 45 questions that cover awareness of dietary recommendations, food sources of nutrients, dietary choices, and diet-disease relationships. Each question includes some sub-items, and each correct answer for those sub-items was scored 1 point. The total score for this instrument ranged from 0 to 110, with higher scores representing increased levels of the subjects' nutrition knowledge.

2.4.3 Health beliefs

The subjects' health beliefs were assessed with the

Hypertension Beliefs and Behaviors Questionnaire [18]. It consists of 46 items, including questions related to HTN-related events, complications, and general characteristics. Items 18 to 24 and 25 to 29 on the instrument assessed the subjects' perceived benefits and perceived barriers, respectively. Each item was measured on a 5-point Likert scale from 0 to 4 (strongly disagree=0, disagree=1, undecided=2, agree=3, strongly agree=4). The total score for the sub-scale of the instrument ranged from 0 to 48, with higher scores representing the subjects' greater health beliefs.

2.4.4 Diet self-efficacy

The subjects' diet self-efficacy was assessed using the Diet Self-efficacy Scale [19]. It consists of 11 items with 3 sub-categories including high-caloric food temptations, social and internal factors, and negative emotional events. The high-caloric food temptations factor consists of 4 items describing situations of exposure to tempting high-caloric foods (e.g., cake or ice cream) that might be difficult to resist eating. The social and internal factors consist of 4 items describing situations in which it might be difficult to resist eating, such as being with friends or feeling tired. The negative emotional events factor consists of 3 items describing negative emotional event situations in which it might be difficult to resist eating. Items were rated using a 5-point Likert scale (not at all confident=0, a little confident=1, moderately confident=2, quite confident=3, very confident=4). The instrument's total score ranged from 0 to 44, with higher scores representing the subjects' increased diet self-efficacy.

2.4.5 Hypertension diet management behaviors

The subjects' HTN diet management behaviors were assessed using the Hypertension Beliefs and Behaviors Questionnaire [18]. Out of the 46 total questions, items 36, 37, 38, 39, 40, and 43 assessed the subjects' HTN diet management behaviors, and these items were measured on a 4-point Likert scale (never=0, rarely=1,

occasionally=2, often=3, always=4). The total score ranged from 0-24, with higher scores representing the subjects' increased HTN diet management behaviors.

2.5 Data collection

Using the admission register as a sampling frame, 25 subjects were selected for each of 4 medical clinics for a total of 100 subjects. Written information about this study was provided to each subject after the procedure was explained and written informed consent was obtained. The subjects were informed of their rights to participate in this study voluntarily. Data collection was done via an interviewer-administered questionnaire in a private room of each clinic from January to February, 2015. The questionnaire was prepared both in English and Sinhala. The average time spent in the completion of the data collection procedure was about 35 to 40 minutes per subject. Data from 91 subjects were included in the final analysis; the data from 8 subjects were excluded due to incomplete data, and 1 data set was excluded because of outlier data.

2.6 Data analysis

Data were analyzed using the IBM SPSS Statistics program, version 20.0. Subjects' general characteristics were analyzed with descriptive statistics and frequencies. The means and standard deviations were used to describe the variables' degrees. HTN diet management behaviors according to the subjects' general characteristics were assessed using t-tests and an ANOVA. The relationships between nutrition knowledge, health beliefs, diet self-efficacy, and HTN diet management behaviors were assessed using Pearson's correlation coefficient analysis. Finally, the factors that might influence HTN diet management behaviors were identified using a stepwise multiple regression analysis.

3. RESULTS

3.1 Subjects' general characteristics

<Table 1> shows the general characteristics of 91 subjects. Most (74.7%; n=68) of the subjects were female, and nearly 75.9% (n=69) of them were between the ages of 55 and 74 years old. Additionally, 74.7% (n=68) were married and 91.2% (n=83) were Sinhalese. Over one-third (39.6%; n=36) had no more than a primary education, while 35.2% (n=32) had completed the General Certificate of Education Ordinary Level. In terms of occupational status, most of the subjects were unemployed (84.6%; n=77), with an income of less than 20,000 Sri Lankan Rupees per month (91.2%; n=83). About half (51.7%; n=46) had 2 or 3 children.

<Table 1> General Characteristics of Subjects (N=91)

Variables	Categories	n(%)
Gender	Male	23(25.3)
	Female	68(74.7)
Age (years)	45-54	12(13.2)
	55-64	34(37.4)
	65-74	35(38.5)
	≥75	10(11.1)
	Unmarried	6(6.6)
Marital status	Married	68(74.7)
	Widowed	17(18.7)
	Sinhala	83(91.2)
Ethnicity	Others	8(8.8)
	Education	Primary education
Secondary education		6(6.6)
GCE ordinary level		32(35.2)
GCE advanced level		13(14.3)
Graduate & others		4(4.3)
Occupational status	Employed	14(15.4)
	Unemployed	77(84.6)
Family income (Sri Lankan Rupees)	≤10,000	46(50.5)
	10,001-20,000	37(40.7)
	>20,000	8(8.8)
Number of children	0	5(5.6)
	1	12(13.5)
	2	22(24.7)
	3	24(27.0)
	≥4	26(29.2)

GCE: General Certificate of Education

3.2 Degree of nutrition knowledge, health beliefs, diet self-efficacy, and hypertension diet management behaviors

The total mean score of nutrition knowledge was 54.10 ± 14.73 , which represented a moderate level <Table 2>. The results of the existing nutrition knowledge were represented in four dimensions, including knowledge of dietary recommendations, nutrient sources, everyday food choices, and diet-disease relationship. The mean scores of knowledge concerning dietary recommendations and everyday food choices were 5.51 ± 1.72 and 6.88 ± 1.88 , respectively, representing a moderate level. The mean scores of knowledge concerning nutrient sources and diet-disease relationship were 34.32 ± 11.60 and 7.33 ± 2.15 , respectively, representing a low level.

The total mean score of health beliefs was moderate, with a value of 34.40 ± 5.69 . The mean scores of perceived benefits and barriers of health beliefs were 20.74 ± 3.70 and 13.66 ± 3.06 , respectively, representing a moderate level. The total mean score of diet self-efficacy was moderate, with a value of 31.44 ± 5.54 .

The mean score of HTN diet management behaviors was high, with a value of 19.44 ± 3.02 . The subjects' HTN diet management behaviors did not differ significantly by gender, age, marital status, ethnicity, education, occupational status, income, or number of children.

<Table 2> Degree of Variables of Interest (N=91)

Variables	M±SD	Range
Nutrition knowledge	54.10±14.73	0-110
Dietary recommendations	6.88±1.88	0-11
Sources of nutrients	34.32±11.60	0-69
Choosing everyday food	5.51±1.72	0-10
Diet-disease relationship	7.33±2.15	0-20
Health beliefs	34.40±5.69	0-48
Perceived benefits	20.74±3.70	0-28
Perceived barriers	13.66±3.06	0-20
Diet self-efficacy	31.44±5.54	0-44
HTN diet management behaviors	19.44±3.02	0-24

HTN: Hypertension

3.3 Correlations among nutrition knowledge, health beliefs, diet self-efficacy, and hypertension diet management behaviors

Nutrition knowledge, health beliefs, and diet self-efficacy had significant positive correlations with HTN diet management behaviors <Table 3>. Nutrition knowledge ($r=.26, p=.013$), health beliefs ($r=.35, p=.001$), and diet self-efficacy ($r=.34, p=.001$) had weak positive correlations with HTN diet management behaviors.

<Table 3> Correlations among Nutrition Knowledge, Health Beliefs, Diet Self-efficacy and Hypertension Diet Management Behaviors (N=91)

Variables	Nutrition knowledge r(p)	Health beliefs r(p)	Diet self-efficacy r(p)
Health beliefs	0.20(.065)		
Diet self-efficacy	-0.07(.497)	0.37(<.001)	
HTN diet management behaviors	0.26(.013)	0.35(.001)	0.34(.001)

HTN: Hypertension

3.4 Factors influencing hypertension diet management behaviors

Multiple regression analyses using a stepwise method were performed to identify the factors influencing HTN diet management behaviors <Table 4>. Three variables, including nutrition knowledge, health beliefs, and diet self-efficacy, explained 19.9% of the variance in HTN diet management behaviors ($F=8.36, p=.001$). Diet self-efficacy was the most significant factor influencing HTN diet management behaviors ($\beta=.29, t=2.75, p=.007$), followed by nutrition knowledge ($\beta=.25, t=2.50, p=.014$). The subjects who had increased levels of nutrition knowledge and diet self-efficacy reported higher levels of HTN diet management behaviors.

<Table 4> Factors Influencing Hypertension Diet Management Behaviors (N=91)

Variables	B	SE	β	t	p
Constant	8.35	2.24		3.72	.001
Nutrition knowledge	0.05	0.02	0.25	2.50	.014
Diet self-efficacy	0.16	0.06	0.29	2.75	.007
Health beliefs	0.10	0.06	0.19	1.77	.08

4. DISCUSSION

This study aimed to assess the levels of nutrition knowledge, health beliefs, diet self-efficacy, and HTN diet management behaviors, the relationships among these variables, and the factors influencing HTN diet management behaviors among Sri Lankan patients. Nutrition knowledge, health beliefs, and diet self-efficacy were significantly correlated with HTN diet management behaviors. Nutrition knowledge and diet self-efficacy were found to be significant factors that might influence HTN diet management behaviors.

In this study, subjects' overall nutrition knowledge was moderate. Of the 4 dimensions of nutrition knowledge, the subjects reported moderate levels of knowledge concerning dietary recommendations and everyday food choices, whereas the levels of knowledge concerning nutrient sources and diet-disease relationship were relatively poor. Nutrition knowledge was significantly associated with HTN diet management behaviors, but this relationship was weakly positive. This finding is consistent with a previous study that reported better knowledge scores for dietary recommendations and lower knowledge scores for food groups, nutrient food sources, and diet-disease relationship among a working population with tertiary education [20, 21]. The researchers reported that the employees with higher nutrition knowledge had higher diet quality behaviors, whereas less nutrition knowledge led to low consumption of healthy food [21, 22]. Most of the subjects in this study were between

the ages of 55 and 74 years, had a primary education, and showed higher incidence of HTN diet management behaviors. Their knowledge of dietary recommendations and choosing everyday foods was moderate, probably due to the proper dietary advice they received from health experts during their illness and follow-up care. Therefore, the provision of proper nutrition education may be an effective strategy for increasing nutrition knowledge to promote HTN diet management behaviors.

Diverse education programs have been developed and assessed to improve nutrition knowledge. For example, McClelland et al. [23] reported that older people who were exposed to the “Eat Smart Stay Well” curriculum, an effective nutrition education program, had significantly improved nutrition knowledge compared to those in the control group. The provision of community-based nutrition counseling and newsletters or printed materials would also be effective in improving nutrition knowledge and diet management behaviors. Hence, it is suggested that health planners focus on strategies that may be fruitful in improving nutrition knowledge among the Sri Lankan HTN population.

In this study, the subjects had moderate overall health beliefs, as indicated by the perceived benefits and perceived barriers. This finding is partially consistent with a previous study result reported by Ranilovic et al. [24]. Those researchers reported that 90% of respondents believed either “fresh, natural foods” or “more fruits and vegetables” constituted healthy eating. Additionally, the subjects in this study also believed that cutting down on salt, eating fruits and vegetables, and consuming fat-free or low-fat dairy products, whole grains, fish, beans, seeds, and nuts were useful for managing HTN. The previous researchers observed that the respondents who did not have beliefs regarding the benefits of making routine visits to health professionals were less likely to consult with them about healthy eating [24]. This result may

reveal that people who believe it is beneficial to visit frequently with health professionals could have more opportunities to consult with them about healthy eating, which is useful for promoting diet management behaviors. Therefore, frequent visits to health professionals would be beneficial for these patients in terms of improving their diet management behaviors.

In this study, health beliefs had a significant, weak positive correlation with HTN diet management behaviors. This finding is consistent with that of a previous study, which reported that beliefs were significantly correlated with adherence to a healthy diet [12]. The subjects perceived more benefits and fewer barriers in relation to eating less fat and sweets in view of their health-damaging effects. When they perceived more benefits to eating healthy food, diet management behaviors improved accordingly. On the other hand, beliefs in the lack of need led to more dietary changes due to the perception of fewer risks from hazards. Therefore, strategies need to be developed toward improving health beliefs in order to promote HTN diet management behaviors in diverse populations.

In this study, subjects reported moderate levels of diet self-efficacy, and the correlation between diet self-efficacy and HTN diet management behaviors was positive. These findings are consistent with those of many previous studies. Pawlak and Colby [13] and Jaiyungyuen et al. [25] have reported relatively high self-efficacy in eating healthy food among African Americans in Eastern North Carolina and older people with HTN in Thailand. Self-efficacy had the strongest positive correlation with diet-promoting behaviors. Moreover, they reported that as diet self-efficacy increased, diet management behaviors improved accordingly.

Previous researchers have demonstrated how increasing diet self-efficacy can lead to the improvement of diet management behaviors. For example, Gutierrez-Dona et al. [26] reported that people

with increased self-efficacy held optimistic beliefs about their capability to control their dietary behaviors, which might help them generate or enact their plans. Therefore, people with increased self-efficacy might be more likely to translate intentions into actions. Turner et al. [27] suggested that changes in behavior can actually precede increased self-efficacy, which in turn will support the maintenance of new behaviors and the establishment of a “positive feedback cycle.” Bandura stated that the strength of self-efficacy is particularly important, as individuals are more likely to both initiate a behavior and continue their efforts until success is achieved [27]. The overall evidence shows diet self-efficacy as an important perception both in initiating and continuing the expected diet management behaviors. Moreover, it is helpful in controlling unhealthy diet behaviors and generating appropriate plans towards healthy diet management behaviors. Therefore, appropriate strategies for improving diet self-efficacy may be effective in enhancing HTN diet management behaviors.

The subjects of this study reported high HTN diet management behavior performance. This finding is consistent with the results of previous studies [25, 28]. The subjects of these previous studies scored the highest in the nutrition sub-dimension of health-promoting behaviors. The majority of the subjects had better self-care behaviors toward maintaining a healthy diet.

As HTN diet management behaviors are important in lowering blood pressure, many researchers have suggested various strategies that can be used to promote diet behaviors [4]. For example, feedback from a health care provider was found to be helpful for individuals in learning new dietary behaviors [29]. The feedback during follow-up provided updated information about the ongoing efforts of changing behaviors. Motivational interviewing was another strategy that could be used to change behaviors effectively as an individual-centered counseling style for eliciting behavioral change. Modeling, an approach to having an

individual observe others’ behaviors (e.g., preparing healthy foods) that are related to his/her goal, was another strategy that could be used to change behaviors [29]. These strategies can be applied to diverse populations to enhance diet management behaviors.

According to a stepwise multiple regression analysis, diet self-efficacy was the strongest significant influencing factor, followed by nutrition knowledge in this study. This indicated that the subjects who had increased levels of diet self-efficacy and nutrition knowledge reported higher levels of HTN diet management behaviors. This study finding is consistent with that of previous studies, which reported that perceived self-efficacy was the strongest significant predictor of health promoting behaviors among older people with HTN [18, 25]. Nutrition knowledge has been reported to be a predictor of food intake and plays an important role in the consumption of healthy food [8].

Although health beliefs were positively correlated with HTN diet management behaviors, this was not a significant influencing factor of HTN diet management behaviors in the final analysis. According to previous studies by Pires and Mussi [12] and White et al. [30], perceived benefits and barriers were strongly correlated with healthy diet behaviors. The subjects who had increased health beliefs reported higher levels of diet management behaviors. Therefore, this represents important determinants of healthy diet behaviors. On the other hand, Ranilovic et al. [24] observed the differences between beliefs and attitudes toward healthy eating by comparing populations in various countries. They suggested the need for further research assessing healthy eating perceptions in relation to actual dietary behaviors. More research needs to be conducted to identify the exact relationship between health beliefs and diet management behaviors among the Sri Lankan HTN population.

Proper diet management strategies are an important

and mandatory approach to improving health and preventing HTN complications. Knowledge-enhancing education programs significantly improved nutrition knowledge, and increased nutrition knowledge was involved in the promotion of healthy diet behaviors [22, 25]. In the same way, strategies aimed at increasing diet self-efficacy enhanced health beliefs and confidence, and the increased diet self-efficacy promoted healthy diet behaviors [26, 27]. Therefore, diet self-efficacy and nutrition knowledge should be considered as important influencing factors when designing strategies aimed at enhancing the diet management behaviors of HTN patients.

This study has some limitations. The sample size was relatively small, and most subjects were females of a low-income status and only a primary education. Furthermore, since it was conducted in one teaching hospital in Sri Lanka, it is not possible to generalize the study findings to the general Sri Lankan population. In addition, this study used instruments of nutrition knowledge and diet management behaviors that were originally developed and validated in western countries. Therefore, brands and names of some food items such as Edam cheese, Stilton cheese, and quiche were not familiar to the Sri Lankan population.

5. CONCLUSIONS

In summary, the study subjects showed moderate levels of nutrition knowledge, health beliefs, and diet self-efficacy. On the other hand, they demonstrated relatively high performance of HTN diet management behaviors. Nutrition knowledge, health beliefs, and diet self-efficacy had a significant, weak positive correlation with HTN diet management behaviors. Nutrition knowledge and diet self-efficacy were found to be significant factors influencing HTN diet management behaviors. The findings of this study may be used as valuable data for further research

concerning the nutrition knowledge, perceived self-efficacy, and diet management behaviors of patients with HTN. Various interventions for improving nutrition knowledge and self-efficacy should be explored to promote healthy diet management behaviors. These interventions will be useful for nurses to continue their roles of educating and encouraging the practice of diet management behaviors among HTN patients, which may help them have long, functional, and independent lives.

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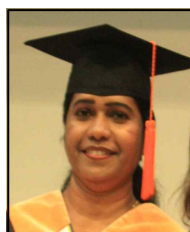
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