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Original Research Article

Knowledge, attitude and behavior toward dietary salt: The nescience among hypertensive patients in Indonesia

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ABSTRACT

Background: Knowledge, attitude and behavior of dietary salt determine sodium intake. Among controlled (CHT) and uncontrolled patients with hypertension (UHT), however, limited information is available. The purpose of the study was to identify knowledge, attitude and behavior toward dietary salt and to define the nescience among hypertensive patients in Indonesia.
Methods: Descriptive cross-sectional study design invited subjects using purposive sampling in a general hospital in Yogyakarta. The inclusion criteria were adult patients with hypertension and able to speak Bahasa Indonesia. The demographic data and knowledge, attitude and behavior toward dietary salt were assessed. Data were collected in cardiac clinics in Indonesia and analyzed using Mann Whitney and chi-squared tests.
Results: A total of 175 participants joined the survey with dominantly males, mature age, married and having basic education level. The CHT group had higher knowledge, attitude and behaviour's percentage on healthy eating, problems-caused by high salty diet, reducing fat and salt consumption than the UHT group although it was not statistically proved. Both groups reported nescience about recommended amount of salt consumption (84.1% versus 81.1%, CHT and UHT respectively), salt-sodium difference (56.5% versus 59.4%), nutritional information (43.5% versus 48.1%) and food labelling (39.1% versus 40.6%). Limited participants always considered packaged indication (7.2% versus 11.3%) and total salt/sodium per package was more favourable label (42% versus 31.1%).
Conclusions: Results showed no significant differences of knowledge, attitude and behavior between patients with controlled and uncontrolled hypertension. Both groups had problems on concerning recommended amount of salt consumption, nutritional information, and food labelling which should be addressed while teaching patients about hypertension.

Keywords: Attitude, Behavior, Dietary salt, Knowledge, Nescience

INTRODUCTION

Salt consumption is important among patients with hypertension. People with cardiovascular diseases, as well as hypertension, should reduce and limit salt consumption.[1,2] The World health organization (WHO) recommends consuming sodium no more than 2 gram/day or 5 gram/day for salt intake among hypertensive patients.[1,3] It is known the low salt intake is challenging and difficult to follow.[1,4] As a result, the excessive salt and sodium consumption is often unpreventable. Overconsumption of salt will directly affect blood pressure and is associated with increasing risk of fatal cardiovascular events.[2]

Prior research was conducted to investigate worldwide salt consumption. The INTERSALT study noted various amounts of salt consumption among different populations

in the world. Salt consumption ranged from about 1.56 gram/day to 10.6 gram/day.[1,3] It indicated most of the salt and sodium consumption is over the WHO's recommendation, particularly for people who have hypertension. The salt study in Asia Pacific countries also indicated comparable results.[5] In Indonesia, about 3.36 gram of salt is consumed a day, which is also higher than the WHO's recommendation.[2,5]

Overconsumption of salt has positive correlation with blood pressure. Patients with hypertension will have higher systolic and diastolic blood pressure if they cannot control their daily salt consumption.[2] A condition where systolic blood pressure is equal or more than 140 mmHg and/or diastolic blood pressure is equal or more than 90 mmHg is known as uncontrolled hypertension.[6] This primary observable indicator is a result of overconsumption of salt and low adherence to hypertension management.

WHO recommends reducing salt intake by using effective strategies to monitor and evaluate salt and specific sources.[7] Identification of dietary salt along with understanding the knowledge, attitude and behavior related to salt are the first steps in reduction of salt consumption.[8] Knowledge, attitude and behavior related to salt intake are known to affect individual salt consumption.[9] Consumers who have good knowledge, positive attitude and behavior would tend to have better health status and limited compromise in health. With this consideration, the effort to increase knowledge, attitude and behavior related to dietary salt is strategically important, especially for patients with hypertension.[9-11]

Increasing hypertension population's knowledge, and improving their attitude and behavior related to salt is crucial, however, understanding on their knowledge and behavior are the first stage of action. To date, there is limited information about knowledge, attitude and behavior related to dietary salt among patients with hypertension in Indonesia. Supplementary information about knowledge, attitude and behavior toward dietary salt between patients with controlled and uncontrolled hypertension will help to adjust interventions of a salt reduction program.

Moreover, identification of certain topics that have inadequate knowledge is critical to promote an effective educational program. Therefore, the aim of this project was to explore the knowledge, attitude and behaviors related to dietary salt and identify the nescience topics among patients with hypertension.

METHODS

Design

Descriptive cross-sectional design was applied in this research. Quantitative research using the survey approach was used to explore the knowledge, attitude, behavior and nescience of salt intake among an Indonesian hypertensive population.

Setting and Sample

The study was conducted in an outpatient department of a general hospital in Yogyakarta, Indonesia, between February and March. Purposive sampling invited the potential patients during their hospital visit. The inclusion criteria were adult patients who had diagnosis of hypertension, understood Bahasa Indonesia and willing to participate in this study. Patients who had record of psychiatric or cognitive disorders were excluded. Patients recruiting criteria were confirmed using medical records as inclusive judgment.

Hypertensive patients were defined as persistent systolic blood pressure (SBP) ≥ 140 mmHg and/or diastolic blood pressure (DBP) ≥ 90 mmHg in consecutive measurements.[2,6,12] Participants were classified as controlled (CHT-SBP < 140 mmHg and/or DBP < 90 mHg) and uncontrolled hypertensive group (UHT–SBP ≥ 140 mmHg and/or DBP ≥ 90 mHg) based on the report of the eight-joint national committee, using their evidence-based guideline for management of high blood pressure in adults.[6]

Instrument

Demographic data, including age, gender, educational level, income and marital status were gathered using a questionnaire. Measurement of blood pressure used validated electronic or mercury devices by qualified nurses after taking a short while rest, in seated or lying position.[2]

The 33 items of questions used to understand knowledge, attitude and behavior related to dietary salt and health. The questionnaire was developed by subgroup of Pan American health organization (PAHO) expert group, and covered knowledge (i.e. salt and sodium difference), attitude, behavior associated with salt intake, presence of chronic diseases (i.e. hypertension, stroke) and labeling preference.[9] It is a commonly used questionnaire about dietary salt and health survey in Australia, England and Canada that was previously field-tested among Latin America and Canada population.[13-15] Questions about knowledge and presence of chronic diseases were available in yes, no, don't know or no answer responses. The attitude section was responded to in four options; agree, disagree, don't know and no answer. Responses for behavior related to salt and health and labeling preference were presented in gradually varied answers (i.e. always to never).

Data collection

The survey was applied in a general hospital by research assistances. Before collecting data, research assistants received a short training about data collection procedure,

eligible patients and ethical considerations. The researchers asked research assistants to first practice simulation of data collection procedure with students. The round table discussion was conducted to gain clarity and similar understanding between researcher and research assistants.

Data collection procedure was conducted hereafter getting hospital permission and approval from the ethical committee of Universitas Gadjah Mada. Qualified nurses in charge at the outpatient's department measured patients' systolic and diastolic BP after 10 minutes of rest, in a seated or lying position and when relaxed. The mean of current and two previous visits of blood pressure measurement were recorded as actual blood pressure to better identify the controlled and uncontrolled groups. Nurses referred eligible patients who met the inclusion criteria to research assistants. Inclusion and exclusion criteria were confirmed using medical records. While waiting, potential patients were approached and provided research explanation. All patients who were willing to participate signed an informed consent form. Research assistants provided a survey questions and asked participants to complete the form. The completed surveys were kept in a sealed envelope. The average time of participation was 10 minutes.

Data analysis

Data was presented in frequency, percentage, mean and standard deviation. If the data was not normally distributed, non-parametric test was selected.[16] To identify baseline participants' characteristics between the CHT and UHT group, Mann Whitney U and chi-squared tests were applied. The differences between CHT and UHT were assessed using Mann Whitney U test. All data analysis was done with SPSS version 20 for Mac with significance level $p < .05$

Ethics committee of associated university in Indonesia approved the study protocol. All procedures of research were applied ethical principles based on Helsinki agreement. Participation was voluntary based and there were no consequences if hypertensive patients refused to participate in the study. Beyond the survey, there was no further identification data requested and written informed consent was provided by all participants.

RESULTS

Demographic data

During data collection period, one hundred and eighty-one prospective participants met the criteria. Only one hundred and seventy-five participants provided data while six patients refused to participate. Participant's demographic characteristics showed the number of males was slightly higher than females in CHT and UHT groups.

Basic education level and marriage status indicated a dominant finding while major prevalence was distributed in cluster age of 55-64 years. The results demonstrated that there were no significant differences in demographic characteristics between CHT and UHT groups (Table 1).

Table 1: Demographic data (n=175).

Variables	Controlled group, (n = 69)		Uncontrolled group, (n = 106)		p-value
	f	%	f	%	
Age (Mean ± SD)	58.90±10.22		59.06±10.16		0.864
35-44	6	8.7	5	4.7	
45-54	11	15.9	32	30.2	
55-64	31	44.9	40	37.7	
≥ 65	21	30.5	29	27.4	
Gender					0.445
Male	35	50.7	60	56.6	
Female	34	49.3	46	43.4	
Education level					0.124
Basic education[a]	41	59.4	78	73.6	
Higher education	28	40.6	28	26.4	
Income					0.088
<150 USD	28	40.6	57	53.8	
>150 USD	41	59.4	49	45.2	
Marital status					0.489
Single/widow/widower	11	15.9	13	12.3	
Marriage	58	84.1	93	87.7	

[a]basic education level in Indonesia is 9 years, f = frequency, % = percentage, SD = standard deviation, USD = US dollar.

Table 2: Participant's agreeing statement and nescience on knowledge, attitude and behavior toward dietary salt (N = 175).

Statements	CHT	UHT
Percentage of participants agreeing toward statements		
I try to eat a healthy diet	100	98.1
I try to minimize the amount of fat I eat	97.1	95.3
I try to minimize the amount of salt I consume	92.7	92.4
Eating a diet high in salt can cause serious health problems	91.3	89.6
My health is generally good	82.6	80.2
I know in general how much salt food contains	79.7	75.5
I think I prefer to see labelling of food indicating the amount of salt or sodium in grams or milligrams	66.7	64.2
I think I prefer to see a clear warning label on the package if foods are high in salt	65.2	64.2
I think I prefer to labelling of food indicating high/medium/low level of salt or sodium	62.3	61.3
I think I prefer to see labelling of food indicating salt or sodium as a percentage of the amount recommended to be eaten per person per day	55.1	53.4
There is sufficient nutritional information on labels of food and drinks	47.8	44.3
I think I know the different between salt and sodium	28.9	24.5
There is too much pressure to eat healthily these days	21.7	22.6
I think I know the recommended amount for consuming salt/sodium per person per day	2.9	4.7
Percentage of nescience toward statements		
I think I know the recommended amount for consuming salt/sodium per person per day	84.1	81.1
I think I know the different between salt and sodium	56.5	59.4
There is sufficient nutritional information on labels of food and drinks	43.5	48.1
I think I prefer to see labelling of food indicating salt or sodium as a percentage of the amount recommended to be eaten per person per day	39.1	40.6
I think I prefer to see labelling of food indicating the amount of salt or sodium in grams or milligrams	23.2	31.1
I think I prefer to labelling of food indicating high/medium/low level of salt or sodium	23.2	30.2
I think I prefer to see a clear warning label on the package if foods are high in salt	23.2	30.2
I know in general how much salt food contains	17.4	20.8
There is too much pressure to eat healthily these days	1.5	3.8
Eating a diet high in salt can cause serious health problems	1.5	2.8

CHT = controlled hypertension, UHT = uncontrolled hypertension.

Knowledge, attitude and behavior toward dietary salt

The percentage of participant's agreeing toward statement of knowledge, attitude and behavior is displayed in Table 2. The top five in the ranking of highest agreeing toward statements on knowledge, attitude and behavior were about eating healthy diet, decreasing fat and salt consumption, consequence of high salt consumption and general health.

More than 80% of participants in both groups agreed concerning the top five ranks of statement. There was no significant difference between CHT and UHT groups toward knowledge, attitude and behavior of salt intake.

The findings also indicated the nescience topics related to knowledge, attitude and behavior on dietary salt. More than eighty percent of participants reported they did not know the recommended amount of salt/sodium in daily consumption.

Differences between salt and sodium, sufficiency of nutritional information in food/drink label and appearance of recommended amount on food labeling followed as the nescience regarding dietary information about salt.

Labeling and salt/sodium sources

Food labeling information was presented in Figure 1-3. Both groups, CHT and UHT were mostly never paying attention for packaged indication (22.4% versus 32.4%, respectively) and only limited participants who always considered (7.2% versus 11.3%).

The reading habit of nutritional label on food packages was various, distributed into often (26.1% versus 19.8%), sometimes (24.6% versus 18.6%), rarely (20.3% versus 26.4%) and never (20.3% versus 23.6%). Most participants preferred the indicating salt/sodium in food labeling as total per package (42% versus 31.1%).

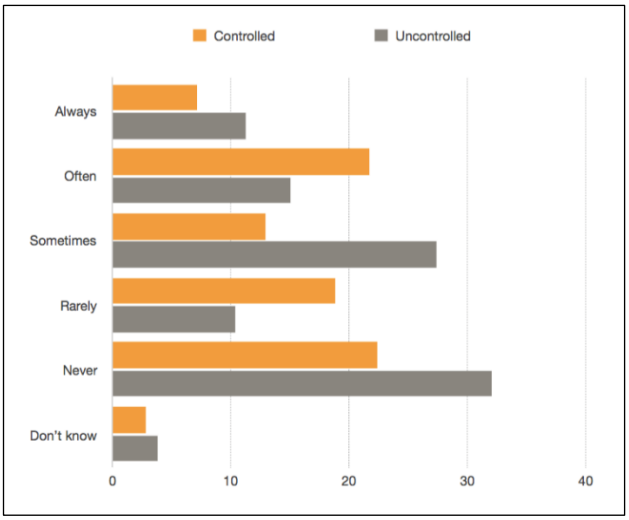

Figure 1: Attention for indicating-packages label (n = 175).

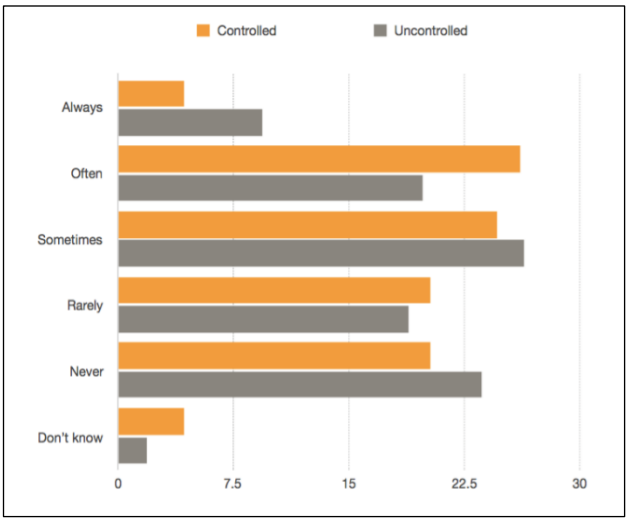

Figure 2: Reading habit of nutritional label on food packages (n = 175).

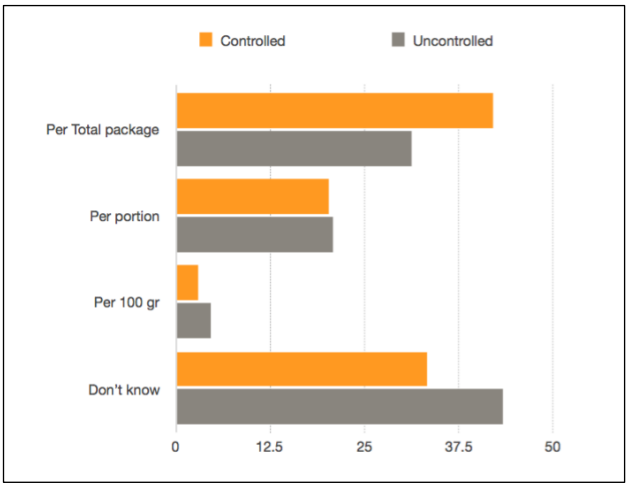

Figure 3: Preference of food label in indicating salt or sodium (n = 175).

DISCUSSION

Participant's characteristics reflect the current condition of hypertension in Indonesia. Limited information is accessible regarding controlled and uncontrolled hypertension in Indonesia. The findings indicated the UHT group was higher by one and a half points than CHT group, showing that there are three UHT patients among five hypertensive patients. This result reflects a greater effort to control and manage hypertension is required.

In recent research, older age, male sex and lower education level have been identified as sociodemographic risk factors of hypertension.[12,17] In this study, for both groups, the dominant distribution of hypertension is in the age the age range of 55-64 years and being mutual incidence after 45 years. One previous study revealed that older age was a significant risk factor of hypertension where the older age has the higher Odds Ratio (OR).[12] Male gender has 1.25 OR, a relatively higher than female gender.[12,17] In this study, males are presented slightly higher than females. Generally, patients with lower education have higher risk factor of hypertension (OR from 1.33 to 1.61).[12] As shown, patients with basic education were notably dominant in his study.

The results pinpointed high agreement on healthy diet and low salt consumption. Most participants in both groups, agreed to consume healthy diet, low fat and low salt intake. The results implied high awareness of salt intake and its consequences. Despite high awareness of salt intake among the population, several nescience topics still existed as a gap in hypertension patients' knowledge. Impressively, most participants admitted insufficient knowledge of the recommended amount of daily salt intake. These findings showed the major concern in sodium and salt intake. Patients with hypertension should consume no more than 5 grams of salt a day, per WHO guideline.[1,2]

In contrast most participants remarked that they had already limited salt intake, which might reflect inappropriate understanding. Remarkably the awareness of salt and sodium consumption did not ensure sufficient knowledge. Previous studies in American countries found similar findings.[9,18,19] Information concerning on appropriate understanding of recommended salt intake and the importance of salt reduction program are necessary for successful treatment.

Difference between sodium and salt and food labeling information was the next in the top nescience list of topics. About 20-50% participants reported lacking knowledge of salt-sodium difference and food labeling information. When educating hypertensive patients, these topics should be the main concerns for assessment and evaluation after the recommendation of daily salt intake.[9] Patients should gain adequate information regarding the

top nescience topics while conducting salt reduction program.

Reading food information is also crucial as behavior related to salt intake. Reading food additional information and nutritional labels are known as core behavior of dietary salt.[10,18] The findings indicated only a limited number of participants always considering packaged indication. About one-fifth for the CHT group and one-third for the UHT group were never paying attention of food indication. On the other hand, the reading habit of dietary labels was diverse, dispersed from often to never. The pattern was notably visible.

Percentage of the CHT group was higher than the UHT group in "often" and "sometimes" option while the reverse finding on "rarely" and "never". This pattern indicated that the CHT group had frequent behavior of reading nutritional habit, compared with UHT group. Both groups necessitated concern of reading habit of nutritional info, however, the UHT group required more. It appears that it was challenging for health care providers to remind patients about paying attention of food labeling and reading habit as common behavior related to salt intake.

Majority of participants favored total salt/sodium per packages as nutritional label while one-third of them responded not sure. It may be difficult for participants who have low education level to understand the complex food label. The previous study found a precise warning that indicated high or low salt content was more favorable.[9,19] Simple and clear warning of salt content will help patients in recognizing salt/sodium amount that they consume. Further, the development of clearer food labels is strongly recommended and would be helpful in salt reduction programs.

The author acknowledges some limitations of the present study such as the use of purposive sampling and small sample size. Nonprobability sampling methods using the purposive approach are considered best choice when randomization cannot be conducted. The purposive sampling and inclusion-exclusion criteria were the indicators in approaching participants. The sample size for this study could portray current condition of hypertensive patients in Indonesia. However, the use of a larger sample size would provide a better portrait. Broader epidemiological study is suggested to extrapolate controlled and uncontrolled hypertension as well as behavior related to dietary salt.

CONCLUSION

In conclusion, the study found there were no significant differences on knowledge, attitude and behavior between the CHT and UHT groups. The nescience topics for both groups were similar. Recommended daily salt-consumption, distinguishing salt and sodium, nutritional information and accessibility and clarity of recommendations on food labeling were the top five of the nescience topics related to salt and sodium intake among hypertensive patients in Indonesia. The top five of nescience topics and common salt/sodium sources should be considered while educating patients with hypertension.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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