KNOWLEDGE, ATTITUDE AND PRACTICE RELATED TO SODIUM INTAKE AMONG HEALTH AND NON-HEALTH SCIENCE STUDENTS IN IIUM KUANTAN

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ABSTRACT

Introduction: Salt intake among Malaysians is more than the recommended amount set by World Health Organisation (WHO) of 5g per day (equivalent to 2000mg sodium). Similarly, the prevalence of hypertension has also increased over the year. There is need to reduce salt consumption as outlined in Salt Reduction Strategy to Prevent and Control NCD for Malaysia 2015-2020. In order to reduce the salt intake, the underlying factors must be identified. Thus, the aims of this study were to examine knowledge, attitude and practice related to salt intake in adults specifically among students of IIUM Kuantan. **Method:** This was a cross-sectional study involving 108 students aged 20-25 years old who completed the questionnaire. The questionnaire consists of demographic data, knowledge, attitude and practice (KAP) related to sodium intake. Data was analysed using descriptive frequency and chi-square test was used to compare the KAP regarding sodium intake between health science and non-health science students in IIUM Kuantan. **Results:** Almost all students have knowledge that high salt intake can cause hypertension, however, many of them did not know the recommended intake of salt per day. The attitude toward importance of lowering salt intake in the diet showed a significant difference between health science and non-health science students ($p<0.01$). Majority of students never add salt to the foods at the table but they always add it in cooking when they are at home. **Conclusion:** No differences in the knowledge and practice related to sodium intake except for attitude between health and non-health science students in IIUM Kuantan.

KEYWORDS: Sodium, Knowledge, Attitude, Practice

INTRODUCTION

Many processed and cooked food are added with seasoning to give a better taste. The most common seasoning that helps to enhance the flavour in food is table salt which also known as sodium chloride. In addition to providing the flavour to the food, salt also used as binding agent, colour controller and fermentation control. Besides, sodium is also used to preserve and process food to increase their life expectancy including pickle, process food such as sausages and salted fish. In human, sodium has important roles in the body as it helps to support the body function. For instance, sodium is important in the maintenance of fluid and electrolytes balance and controlling blood pressure.

On the contrary, excessive intake of sodium gives negative impact to the health. The intake of salt over recommended levels will increase the risk of high blood pressure and other diseases. In fact, World Health Organization (WHO) stated that high blood pressure will lead to coronary disease and stroke (WHO, 2012). The consumption of salt has been increasing over the years because it is widely added in many cooked and processed food. It was reported that overall mean of sodium intake in Malaysia was 2761 mg/day which exceeded the recommendation by World Health Organization of 2000 mg/day (Institute for Public Health, 2016).

Specifically, people with high educational levels such as university and college students showed the highest intake of sodium (Choong et.al 2018). Based on a study by the Ministry of Health in 2015, it was reported that people age above 18 years old had consumed above the recommended level. Unsurprisingly, the prevalence of hypertension has also increased, for example, from 32.7% in 1996 to 43.5% in 2011 (Naing & Wai, 2016). There is a need to reduce sodium intake since high intake of sodium can increase high blood pressure that leads to other chronic diseases. Thus, this study was to assess the knowledge, attitude and practise toward salt intake among young adults especially university students who are commonly exposed to high in sodium foods (Abraham, Noriega, & Shin, 2018). The information obtained from this study can be used as a reference in combating issues related to high sodium intake and hypertension among young adults in the university settings.

METHODS

Subjects

108 undergraduate students (70 health science; 38 non-health science) were selected using non-randomized convenience sampling in International Islamic University Malaysia (IIUM) Kuantan campus. The health science students involved four Kulliyyah namely Kulliyyah of Nursing, Kulliyyah of Allied Health Sciences, Kulliyyah of Pharmacy and Kulliyyah of Medicine. The non-health science students were from Kulliyyah of Science. Informed consent was obtained from the students. The protocol of the study was approved by The Kulliyyah Postgraduate and Research Committee (KPGRC) of the Kulliyyah of Allied Health Sciences, International Islamic University Malaysia and IIUM Research Ethics Committee (IREC).

Data Collection

Questionnaires were distributed to the students regarding the knowledge, attitude and practice. The questionnaire consists of demographic data, knowledge, attitude and practice question related to sodium intake and also food frequency questionnaire. The questions were adapted from a study from Ministry of Health known as Intervention Study to Reduce Salt Intake among Ministry of Health Staff (My STARS).

Statistical analysis

The statistical analysis of results included descriptive analysis that analysed socio-demographic data, knowledge, attitude and practice related to sodium intake. The knowledge, attitude and practice regarding sodium intake were compared between health science and non-health science students by using Chi-square test.

RESULTS

Socio-demographic data

The socio-demographic characteristic of the students is shown in Table 1. Majority of the students were females (65.7%), Malay (99.1%), not married (92.92%) and aged 23 years old (63.9%).

Table 1: Socio-demographic characteristic of the students

Characteristic	Total, n (%)	Health Science, n (%)	Non-Health Science, n (%)
Gender			
Male	37 (34.3)	19 (27.1)	18 (47.4)
Female	71 (65.7)	51 (72.9)	20 (52.6)
Race			
Malay	107 (99.1)	69 (98.6)	38 (100)
Others	1 (0.9)	1 (1.4)	0
Marital Status			
Single	100 (92.2)	64 (91.4)	36 (94.7)
Married	1 (0.9)	1 (1.4)	0
Age (in years)			
20	2 (1.9)	1 (1.4)	1 (2.6)
21	10 (9.3)	6 (8.6)	4 (10.5)
22	25 (23.1)	11 (15.7)	14 (36.8)
23	69 (63.9)	51 (72.9)	18 (47.4)
24	1 (0.9)	0	1 (2.6)
25	1 (0.9)	1 (1.4)	0
Year of Study			
2	25 (23.1)	14 (20.0)	11 (28.9)
3	83 (76.9)	56 (80.0)	27 (71.1)
Financial Aid			
JPA	29 (26.9)	18 (25.7)	11 (28.9)
PTPTN	29 (26.9)	21 (30.0)	8 (21.1)
Self-sponsored	34 (31.4)	21 (30.0)	13 (34.2)
Others	15 (13.9)	9 (12.8)	6 (15.7)

JPA: Jabatan Perkhidmatan Awam
PTPTN: Perbadanan Tabung Pendidikan Tinggi Nasional

Knowledge related to sodium intake

Table 2 indicates that virtually all students (98.1%) had knowledge that high salt diet can cause a serious health problem while those who had no knowledge were from non-health science. Almost all students (95.4%) agreed that high salt diet is associated with hypertension, however, they (74.1%) had no knowledge about the recommended intake of salt for adult per day. In addition, 72.2% and 74.1% of all students knew that potassium chloride is not a chemical name for salt and sodium/natrium refers to salt in the Information panel, respectively. The same trend of knowledge is seen between health science and non-health science students.

Table 2: Knowledge regarding sodium intake

Statement	Total, n (%)	Health Science, n (%)	Non-Health Science, n (%)	X^2 value	p value
Do you think that a high salt diet could cause a serious health problem?					
Yes	106 (98.1)	70 (100)	36 (94.7)	3.754	0.53
No	2 (1.9)	0	2 (5.3)		
If Yes, what sort of problem?					
High blood pressure	103 (95.4)	67 (95.7)	36 (94.7)		0.452
Osteoporosis	2 (1.9)	2 (2.9)	0		
Stomach cancer	1 (0.9)	0	0		
Kidney stones	36 (33.3)	23 (32.9)	13 (34.2)	1.588	
Stroke	26 (24.1)	20 (28.6)	6 (15.8)		
Heart disease	41 (38.0)	30 (42.9)	11 (28.9)		
Leptospirosis	0	0	0		
Don't know	0	0	0		
Do you know the national recommendation of salt intake for an adult in a day?					
Right	10 (9.3)	7 (10.0)	3 (7.9)		0.349
Wrong	18 (16.7)	9 (12.9)	9 (23.7)	2.103	
Don't know	80 (74.1)	54 (77.1)	28 (73.7)		
The chemical name of salt in cooking is potassium chloride					
Right	19 (17.6)	14 (20.0)	5 (13.2)		0.554
Wrong	78 (72.2)	50 (71.4)	28 (73.7)	1.181	
Don't know	11 (10.2)	6 (8.6)	5 (13.2)		
Sodium / Natrium refers as salt in the Information Panel					
Right	80 (74.1)	53 (75.7)	27 (71.1)		0.034
Wrong	6 (5.6)	1 (1.4)	5 (13.2)	6.775	
Don't know	22 (20.4)	16 (22.9)	6 (15.8)		

***Expected answers are in bold**

Attitude related to sodium intake

Table 3 shows that more than half of total students (54.6%) were unsure the amount of salt that they think they are consumed. The similar trend is also seen between health science and non-health science students. Interestingly, health science students significantly believed that lowering the salt/sodium in the diet is very important of which the percentage was double than non-health students. A comparable number of students think that they either do anything or not do anything on regular basic to control their salt or sodium intake.

Table 3: Attitude regarding sodium intake

Statement	Total, n (%)	Health Science, n (%)	Non-Health Science, n (%)	X^2 value	p value
How much salt do you think you consume?					
Far too much	4 (3.7)	4 (5.7)	0		0.302
Too much	17 (15.7)	13 (18.6)	4 (10.5)		
Too little	3 (2.8)	15 (21.4)	10 (26.3)	4.85	
Far too little	2 (1.9)	1 (1.4)	2 (5.3)		
Don't know	59 (54.6)	37 (52.9)	22 (57.9)		
How important to you is lowering the salt/ sodium in your diet					
Not at all important	2 (1.9)	0	2 (5.3)		0.004*
Somewhat important	48 (44.4)	25 (35.7)	23 (60.5)	11.244	
Very important	58 (53.7)	45 (64.3)	13 (34.2)		
Do you do anything on regular basis to control your salt or sodium intake?					
Yes	53 (49.1)	37 (52.9)	16 (42.1)	1.143	0.285
No	55 (50.9)	33 (47.1)	22 (57.9)		

*p<0.01: significant different

Practice related to sodium intake

The practice towards sodium intake was assessed with Likert-scale based answer with 'never', 'rarely', 'sometimes', 'often' and 'always'. Based on Table 4.7, majority of all students (65.7%) never add salt to food at the table. The same trend is also seen in both health science (62.9%) and non-health science (71.1%). Regardless of background of studies, about half of students rarely add soy sauce to food at the table. On the other hand, majority of them always add salt during cooking when eating at home.

Table 4: Practice regarding sodium intake

Statement	Total, n (%)	Health Science, n (%)	Non-Health Science, n (%)	X^2 value	p value
Do you add salt to food at the table?					
Never	71 (65.7)	44 (62.9)	27 (71.1)		
Rarely	29 (26.9)	22 (31.4)	7 (18.4)	3.889	0.421
Sometimes	5 (4.9)	3 (4.3)	2 (5.3)		
Often	2 (1.9)	1 (1.4)	1 (2.6)		

Always	1 (0.9)	0	1 (2.6)		
Do you add soy sauce to food at the table?					
Never	20 (18.5)	15 (21.4)	5 (13.2)		
Rarely	50 (46.3)	32 (45.7)	18 (47.4)		
Sometimes	22 (20.4)	12 (17.1)	10 (26.3)	2.142	0.710
Often	12 (11.1)	8 (11.4)	4 (10.5)		
Always	4 (3.7)	3 (4.3)	1 (2.6)		
In the food you eat at home salt is added in cooking					
Never	1 (0.9)	1 (1.4)	0		
Rarely	4 (3.7)	2 (2.9)	2 (5.3)		
Sometimes	16 (14.8)	11 (15.7)	5 (13.2)	1.078	0.898
Often	27 (25.0)	17 (24.3)	10 (26.3)		
Always	60 (55.6)	39 (55.7)	21 (55.3)		

DISCUSSION

Knowledge related to sodium intake

Our result showed that virtually all students had knowledge that high salt diet can lead to serious health problems especially hypertension. Similarly, majority of students in the University of Sharjah in the United Arab Emirates (UAE) were also aware the adverse health effects associated with excessive salt intake (Ismail et. al 2019). This suggests that students are now well-informed about the harmful effects of high salt intake. In a study among health staff of the Ministry of Health Malaysia, majority (87.4%) knew that high salt intake is associated with hypertension (Institute for Public Health, 2016). In another study among respondents in sub-Saharan African countries, 85% knew that high salt intake can cause health problems (Leyvraz et al., 2018).

Attitude related to sodium intake

More than half (54.6%) students were unsure how much salt they think they consume. This could be partly because they had no knowledge about the recommended salt intake and therefore cannot perceive whether their salt intake daily is less or more than the recommended amount. Our finding is higher to what was reported by Mahat et. al (2017) where only 37.7% respondents did not know how much sodium that they had consumed.

Majority students believed that lowering the salt/sodium in the diet is important. A study by Ismail et. al (2019) also reported that majority students in the

University of Sharjah also agreed that reducing salt intake will improve health and blood pressure. This is aligned with their knowledge that high salt diet can lead to serious health problem such as hypertension. In another study involving adult Lebanese, majority also agreed that reducing sodium intake is important (Nasreddine, et. al 2014).

Practice related to sodium intake

Food choice and food intake are influenced by nutrition knowledge of an individual. For instance, knowing the recommended amount of daily salt intake can aid people to make better choice when purchasing food product and aware when cooking or eating (Marakis, Tsigarida, & Mila, 2013). Majority of students never add salt to food at the table but when cooking at home, they always add salt to their food. These findings are in line with a study conducted among university students in UAE by Ismail et. al (2019). Another comparable finding was also observed in Greek where most of the respondents always add salt during cooking (72.4%) but rarely/never on their plate at the table (70.6%) (Marakis, Tsigarida, & Mila, 2013). The predominant salts sources used in Asian cooking were usually table salt and sauces (Brown et. al 2009). Thus, the initiative to reduce salt should focus on reducing salt during cooking and finding healthier ways to promote and improve taste of dishes using spices as an alternative to salt.

KAP related to sodium intake between health science and non-health science students

Overall, our result showed that there were no differences between health science and non-health science in term of knowledge related to sodium intake. However, there was a significant difference in term of attitude of students toward the importance of lowering salt between health science and non-health science students. A similar observation was also reported in a study among Bangladeshi students where lowering salt intake was more important among medical students than non-medical students (Mondal, Sarker, & Banik, 2017). Health sciences perceived higher attitude toward reducing salt as their programme is related to study about health and diseases and possibly it is included in their curriculum.

Besides, practice related to sodium intake also showed no difference between students of health science and non-health science. Majority of undergraduate students eat at college dining facilities or café with limited healthy options (Abraham, Noriega, & Shin, 2018). In addition, choices of food between health science and non-health science students are similar as they were in the same hostel environment and café. If the students eat at home, majority of them always add salt during cooking and this not surprising as many Asian dishes have table salt and sauces added (Institute for Public Health, 2016).

CONCLUSION

In conclusion, majority of the students knew that high salt diet can cause serious health problem specifically hypertension. They were also unsure whether the salt intake is too much or too little which is consistent with the fact that they had no knowledge about the recommended amount of salt intake daily. Overall, there was no significant difference between health science and non-health science students except for the importance of lowering salt in the diet between the two groups.

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