

## Knowledge, attitudes and practice of salt intake and blood pressure level in a multi-ethnic population in Malaysia

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**Objective:** A changing lifestyle in the transition from a developing to a more developed country has led to increases in obesity, physical inactivity and unhealthy diet, including high salt intake. Studies have shown that salt consumption is high in Asia, but little is known about the practice among different ethnic groups. This study aimed to examine the knowledge, attitudes and practice of salt intake among Malaysian adults by different ethnic groups.

**Design and method:** Participants aged  $\geq$  18 years were recruited during a blood pressure health screening campaign from various centers. All participants completed a questionnaire that capturing information on socio-demographics, knowledge, attitudes and practice about salt consumption. Weight and height were measured and seated blood pressure (BP) measurements using an oscillometric sphygmomanometer were taken twice and averaged. Hypertension is defined as a systolic BP  $\geq$ 140mmHg and/or diastolic BP  $\geq$ 90 mmHg.

**Results:** A total of 5128 participants were included in the study. The mean age of the participants was  $39.5 \pm 17.4$  years and 59.6 % were female. The mean SBP was  $121.4 \pm 17.6$  mmHg and mean DBP  $75.5 \pm 11.1$  mmHg. 61.5% knew the correct amount ( $\leq$  5 g) of daily dietary salt intake and 8.4% did not think it was important to reduce salt intake. 68.6% took measures to control salt intake; 69.9% avoided/minimized canned food, only 34.2% look at the salt labels and less than a third do not add salt during cooking, used spices during cooking and avoid eating in outlets and all of these practices were statistically significant between ethnic groups ( $p < 0.001$ ). Knowledge, attitude and practice of not reducing high intake of dietary salt does contribute to raise high BP as shown in Table 1.

**Conclusion:** Our study reported that good knowledge does not translate into the desired attitude or practice of lower salt intake. More needs to be done to improve attitudes and behaviours about dietary salt intake, and to tailor it to different ethnic groups. This is warranted to prevent the increasing prevalence of hypertension.

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Word counts: 335.

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TABLE 1 Knowledge, attitude and practice towards dietary salt intake by BP control

Factor	Frequency (%)		p value
	<140/90 mmHg	≥140/90 mmHg	
<b>Knowledge</b>	115.5/72.2	146.5/89.2	
<b>2.6 Do you know the difference between Salt and Sodium? (n=5069)</b>			
No	2630 (77.8)	752 (22.2)	< 0.001
Yes	1464 (86.8)	223 (13.2)	
<b>2.8 Do you believe a high salt diet could cause a serious health problem? (n=5097)</b>			
Strongly agree	2252 (82.9)	466 (17.1)	<0.001
Agree	1645 (78.3)	456 (21.7)	
Disagree	100 (82.0)	22 (18.0)	
Strongly disagree	13 (59.1)	9 (40.9)	
Not sure	108 (80.6)	26 (19.4)	
<b>2.9 If you agree, what sort of problem? Hypertension (n=4829)</b>			
No	510 (86.3)	81 (13.7)	<0.001
Yes	3391 (80.0)	847 (20.0)	
<b>Attitude</b>			
<b>2.2 How much salt do you think you consume? (n=5111)</b>			
Do not know	303 (78.9)	81 (21.1)	0.002
Far too much	77 (81.9)	17 (18.1)	
Too much	524 (81.1)	122 (18.9)	
Far too little	110 (78.0)	31 (22.0)	
Too little	611 (75.9)	194 (24.1)	
Just the right amount	2506 (82.4)	535 (17.6)	
<b>Practice</b>			
<b>2.5 When buying processed food (canned, food in packages, etc), do you read food label on sodium/ salt content? (n=5099)</b>			
No	2578 (79.7)	655 (20.3)	0.015
Yes	1540 (82.5)	326 (17.5)	
<b>2.7 Do you pay attention to indications on packages like 'no added salt', 'low in salt', 'light'? (n=5094)</b>			
Never	670 (83.0)	137 (17.0)	< 0.001
Rarely	739 (84.2)	139 (15.8)	
Sometimes	1099 (81.0)	257 (19.0)	
Often	663 (81.7)	149 (18.3)	
Always	949 (76.5)	292 (23.5)	
<b>2.11 If yes to question 2.10 (take measures to control salt or sodium intake), what do you do?</b>			
<b>1. Avoid / minimize processed foods (canned food) (n=3631)</b>			
No	858 (75.9)	272 (24.1)	< 0.001
Yes	2057 (82.2)	444 (17.8)	
<b>2. Look at the salt labels (n=3631)</b>			
No	1885 (78.8)	506 (21.2)	0.002
Yes	1030 (83.1)	210 (16.9)	
<b>7. Avoid eating food prepared outside of home (n=3630)</b>			
No	2080 (81.5)	472 (18.5)	0.004
Yes	834 (77.4)	244 (22.6)	