

Kertas Asli/Original Articles

Knowledge, Awareness and Attitude Related to Hypertension and Garlic Supplement in an Urban Population

(Pengetahuan Kesedaran dan Sikap Berkaitan dengan Hipertensi dan Suplemen Bawang Putih di Kalangan Penduduk Bandar)

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ABSTRAK

Garlic has gained popularity worldwide as a non-pharmacological treatment for hypertension but its use in Malaysia is still moderate. This study was undertaken among Malaysian urban population to assess their knowledge, awareness and attitude towards garlic supplement. This study is a cross sectional study and was carried out from February to May 2015. A total of 202 respondents took part in the study with 45% (n=91) taking garlic supplement. The result demonstrated that there was a significant negative correlation with age and knowledge score ($r=-0.15$, $p=0.03$). Majority of the respondents were unaware (n=61/202, 69.8%) that garlic has blood pressure lowering properties. Most preferred conventional medicines (n=119/202, 58.9%) over garlic supplement (n=83/202, 41.1%). However, most of the respondents (n=176/202, 87.1%) were interested to know more about the use of garlic for hypertension. There is no significant correlation between knowledge, awareness and attitude of respondents towards garlic supplement.

Keywords: Attitude; awareness; blood pressure; garlic supplement; knowledge

ABSTRAK

Bawang putih telah popular di seluruh dunia sebagai rawatan bukan farmakologi untuk tekanan darah tinggi tetapi penggunaannya di Malaysia masih terhad. Kajian ini dijalankan di kalangan penduduk bandar di Malaysia untuk menilai pengetahuan, kesedaran dan sikap mereka terhadap suplemen bawang putih. Kajian ini adalah kajian rentas dan dijalankan dari bulan Februari hingga Mei 2015. Sejumlah 202 responden telah mengambil bahagian dalam kajian ini dengan 45% (n = 91) mengambil suplemen bawang putih. Keputusan menunjukkan bahawa terdapat korelasi negatif yang signifikan dengan skor umur dan pengetahuan ($r = -0.15$, $p = 0.03$). Majoriti responden tidak mengetahui (n = 61/202, 69.8%) bahawa bawang putih dapat menurunkan tekanan darah. Kebanyakan responden lebih suka mengambil ubat konvensional (n = 119/202, 58.9%) berbanding dengan suplemen bawang putih (n = 83/202, 41.1%). Walau bagaimanapun, kebanyakan responden (n = 176/202, 87.1%) berminat untuk mengetahui lebih lanjut mengenai penggunaan bawang putih untuk mengawal tekanan darah tinggi. Tiada kaitan yang signifikan antara pengetahuan, kesedaran dan sikap responden terhadap suplemen bawang putih.

INTRODUCTION

Cardiovascular diseases namely cardiac failure, ischaemic heart disease and cardiac arrhythmia are the leading cause of morbidity and mortality worldwide (WHO 2016) including Malaysia (KKM 2016). Liew and his co-workers reported that in Malaysia, hypertension and dyslipidaemia are the most prevalent risk factors associated with cardiovascular diseases (Liew et al. 2008). Alarmingly, despite an improvement in the health care system, the prevalence of Malaysian adults above 18 years who were diagnosed with hypertension has increased from 20.7% in 1996 (NHMS 1996) to 32.7% in 2011 (NHMS 2011).

According to the Ministry of Health Malaysia (MOH 2018), patients with pre-hypertension are defined as having systolic blood pressure (SBP) of 120 to 139 mmHg or diastolic blood pressure (DBP) of 80 to 89 mmHg should be managed with non-pharmacological treatments which include; weight reduction, restriction of sodium and alcohol intake, smoking cessation, regular physical activities, healthy eating and dietary supplements. Garlic which is commonly used in cooking has gained popularity in the prevention of cardiovascular diseases, particularly in lowering cholesterol and blood pressure (Reid 2016). Garlic is rich in sulphur-containing compounds such as alliin, allicin, diallyl sulphide, diallyl disulphide, diallyl

trisulphide, ajoene and S-allylcysteine (Amagase 2006; Yun et al. 2014). These compounds contribute to the lowering of BP by mediating intracellular nitric oxide (NO) and hydrogen sulphide (H₂S) production (Reid and Fakler 2014) as well as inhibition of the angiotensin-converting enzyme (ACE) (Shouk et al. 2014). Interestingly, even though garlic reduces BP in hypertensive patients, it does not affect individuals with normal BP significantly (Reinhart et al. 2008).

Even though garlic has been widely studied (Reid 2016) in treating cardiovascular diseases, it is not widely used by pre-hypertensive and hypertensive Malaysians. Lack of knowledge and awareness about the benefits of garlic might be among the contributing factors for this scenario. Pre-hypertensive and hypertensive patients might also view that garlic supplement will not be as effective as conventional treatments. Herein, this study aimed to investigate the correlations of knowledge, awareness and attitude towards the use of garlic supplement for reducing BP. This information can be utilised to educate the public about non-pharmacological treatments for pre-hypertension and hypertension. Nevertheless, the study was carried out on general public instead of hypertensive patients because many studies have covered supplements taken by hypertensive patients (Mahfudz and Chan 2005; Ching et al. 2013).

MATERIALS AND METHODS

This cross-sectional study was carried out on the adult population in Kuala Lumpur area after obtaining approval from the National Medical Research Register (NMRR) (ID: 14-403-20059) during the period of February-May 2015. Adult population was chosen because they are the main user of complementary and alternative medicines (CAM). Respondents aged more than 18 years old, able to read and write were included through convenient sampling where questionnaires were distributed in malls, bus stations and hospital waiting areas and those who were approached agreed to participate. Incomplete questionnaires were excluded from the study. A total of 202 participants took part in the current work with informed consent. The questionnaire consists of four sections; demographic information, knowledge, awareness and attitude on garlic supplement and hypertension. Demographic data collected were gender, ethnic, age, education, allergies and other medications taken.

Knowledge of hypertension questionnaire was adapted from previous work (Olivera et al. 2005). The questionnaire assessed eleven statements on hypertension. Respondents were asked to choose whether they agreed 'Yes' or did not

agree 'No' to the statements. Each correct answer was given a score of '1', whilst incorrect answers were given a score of '0'. The total score ranged from 0-11 with a higher score indicating a higher knowledge in hypertension.

Awareness of garlic use for hypertension was assessed based on five statements which were divided into two answers: 'Yes' and 'No' (Olivera et al. 2005). Correct statements were given a score of '1' whilst incorrect statements were given a score of '0'. Total score ranged from 0-5, with a higher score indicating a higher awareness. Additional statements; 'Is the treatment effective?' for those who took garlic supplements, and 'If you are taking other supplements, have your blood pressure improved since you started taking the supplement?' were added at the end of the section.

Attitude towards garlic use for hypertension was adapted from previous work (Olivera et al. 2005). The questionnaire assessed respondents' attitude through three statements based on a 'Yes' or 'No' answer. A positive attitude 'Yes' was given a score of '1', whilst a negative attitude 'No' was given a score of '0'. The total score ranged from 0-3, with a higher score indicating a more positive attitude. An additional statement; 'Would you be interested to know more about garlic supplements' was included at the end of the section.

Analysis of the data was carried out using IBM SPSS Statistics for Windows Version 21.0. Descriptive data were presented as percentages, means and standard deviations (SD). Data were analysed using Chi-squared for categorical data. T-tests and ANOVA were used to compare numerical data. Associations were presented using a Pearson correlation. A p-value of less than 0.05 was considered statistically significant.

RESULTS

A total of 202 respondents were included in the study. The mean age of the respondents was 27.02 ± 9.64 year (range 19-67 years). Approximately 49% (n=98) were female and 51% (n=104) were male. Majority of the respondents were Malays (n=133, 65.8%), followed by Chinese (n=60, 29.7%) and Indians (n=8, 4.5%). A total of 154 (76.2%) respondents had a tertiary education compared to 48 (23.8%) with a secondary education. A majority of the respondents (n=171, 84.7%) did not have allergies. However, 15.3% (n=31) admitted to having allergies to food, medication, dust or household products. Among the respondents, 5 (2.9%) were on hypertensive medications, 11 (6.5%) respondents received medications for problems other than hypertension and the remaining 152 (90.5%) respondents were not on any medication at all. From the

study population, 112 (55.4%) respondents have a family member diagnosed with hypertension.

The knowledge score of the study population was an average of 8.9 ± 1.5 (range 4-11) (Table 1). A higher score demonstrated better knowledge of hypertension. Analysis demonstrated that there was a significant negative correlation with age and knowledge score ($r=-0.15$, $p=0.03$). This demonstrates that younger respondents had better knowledge of hypertension than older respondents. However, no significant findings were demonstrated between knowledge scores and other demographic characteristics.

TABLE 1. Knowledge of respondents towards hypertension (n=202)

Statement	Response	n	%
Do you know the normal values of blood pressure?	Yes	16	79.7
	No	41	20.3
The older a person is, the greater the risk of developing hypertension.	Yes	186	92.1
	No	16	7.9
Both men and women have equal chance of developing hypertension.	Yes	83	41.1
	No	119	58.9
Hypertension is a treatable condition.	Yes	125	61.9
	No	77	38.1
Smoking is the risk factor for hypertension.	Yes	168	83.2
	No	34	16.8
Eating fatty food is a risk factor of developing hypertension.	Yes	185	91.6
	No	17	8.4
Being overweight is a risk factor for hypertension.	Yes	179	88.6
	No	23	11.4
Regular physical activities reduce the risk of getting hypertension.	Yes	186	92.1
	No	17	7.9
Eating more salt has no effect on blood pressure.	Yes	189	90.1
	No	20	9.9
Medication alone can control hypertension.	Yes	165	81.7
	No	37	18.3
Hypertension can lead to other life-threatening diseases.	Yes	197	97.5
	No	25	2.5

Respondents' awareness score was an average of 1.3 ± 1.4 (range 1-5) (Table 2). A higher score indicated that the respondents were more aware of garlic use for hypertension. There was no significant finding demonstrated between awareness score and demographic characteristics. A total of 91 (45%) respondents admitted to taking garlic supplement for general health with 17 (18.7%) agreeing that the treatment was effective. Most of the respondents however believed that garlic supplements were not beneficial for general health ($n=74$, 81.3 ; $\chi=35.7$, $p<0.001$). Among the respondents who took garlic supplements, 3

(2.7%) noted adverse effects when taking the supplements. The adverse effects noted by all three respondents were the presence of bad breath. The preferred treatment for hypertension of the study respondents was mostly antihypertensive drugs compared to garlic supplements ($n=119$, 58.9%). Interestingly, 37 (18.3%) respondents admitted to taking other supplements such as vitamins, herbal pills, fish oils, bovine placenta, ginkgo biloba, ginger supplements, alfalfa, honey, dates and black cumin seed. A significantly high number of respondents believed that these supplements were effective in controlling blood pressure ($n=24$, 64.8%; $\chi=4.6$, $p=0.033$). No significant association was demonstrated between awareness of garlic and knowledge of hypertension in the study population.

TABLE 2. Awareness of garlic supplement for hypertension among respondents (n=202)

Statement	Response	n	%
Have you ever been told by a health care provider that supplements can lower your blood pressure?	Yes	8	4
	No	194	96
Have you ever been told by a health care provider what type of supplements can lower your blood pressure?	Yes	74	36.6
	No	128	63.4
Are you aware that garlic supplement can be used as a medicine?	Yes	61	30.2
	No	141	69.8
Have you ever used garlic supplement as a medicine?	Yes	91	45
	No	111	55
If yes, have you discussed about taking garlic supplement with your doctor?	Yes	33	16.3
	No	169	83.7

TABLE 3. Attitude towards garlic supplement for hypertension among respondents (n=202)

Statement	Response	n	%
If you are told by a doctor or health care provider that garlic can be used to lower blood pressure, would you consider taking garlic supplement?	Yes	188	93.1
	No	14	6.9
In your opinion, is garlic supplement important in controlling blood pressure?	Yes	144	71.3
	No	58	28.7
In your opinion, can garlic supplement cure hypertension?	Yes	97	48
	No	144	52

The attitude score of respondents towards garlic supplement in hypertension was an average of 2.1 ± 0.9 (range 0-3) (Table 3). No significant findings were demonstrated between demographics and attitude scores. Further analyses demonstrated that there was also no association between awareness and attitude towards garlic supplement, as well as knowledge of hypertension and attitude towards garlic within the study population.

However, upon further questioning, most of the respondents (n=176, 87.1%) were interested to know more about the use of garlic for hypertension.

DISCUSSION

The use of complementary medicines has become more popular among the modern community, despite the presence of conventional medications. In the Malaysian population that consists of various Asian ethnics, this may be even more pronounced (Siti et al. 2009). This is evidently observed in the current work, which demonstrates the three main ethnics present in Malaysia. Despite their differences in cultural background, the use of complementary medicine has been known to be common among them (Siti et al. 2009). In diseases such as hypertension, complementary medicines such as garlic supplement has garnered a lot of attention. Evidently, hypertension in Malaysia is common (NHMS 2015), with approximately half of the present study population admitting to having a family member diagnosed with the disease. Therefore, identifying the use of complementary medicines such as garlic in hypertension among the local population could help provide a basis for improving non-pharmacological management.

Knowledge of hypertension was found to be comparable to previous work (Oliveria et al. 2005). Basic understanding of hypertension can further improve the management of this disease. A number of respondents were still unaware of the normal blood pressure reading. Recognition of blood pressure readings has been identified as a major challenge in prevention and treatment of hypertension (Oliveria et al. 2005). This is especially a concern as the present work demonstrates that the younger generation were found to know more about hypertension. The risk of hypertension has been found to increase with age, thus ensuring adequate knowledge of hypertension among the older generation could be beneficial.

The prevalence of garlic supplement usage in this study is similar to previous studies, which reported that 34-63% (Ching et al. 2013; Aziz and Tey 2009) of the public used complementary medicines among Malaysians. It is important to note that a high number of respondents used garlic for general health, despite not knowing its benefit in hypertension. This presents an interesting finding and reflects that the cultural practice of complementary medicine among the population is possibly driven without appropriate awareness of the benefits of garlic. A large number of the respondents however, did not feel that garlic supplement was effective, and preferred other complementary medicines for hypertension management. Interestingly, majority of the respondents in the current

work preferred conventional antihypertensive agents over garlic supplement. This was contrary to previous findings that demonstrated herbal products were preferred over allopathic medicines (Ching et al. 2013; Sekhri, Bhanwra and Nandha 2013). The reason behind the preference of conventional medication could be due to the adverse events associated with garlic use. The drawbacks caused by garlic were found to occur within the present study respondents. Other work has also demonstrated that garlic causes adverse events such as flatulence, gastrointestinal disturbance and a pungent odour (Amagase et al. 2001), which could have led to an unfavourable response towards garlic use.

The attitude of the respondents was found to be slightly positive with majority of the study population agreeing to garlic use if prompted by their healthcare professional. Despite this, they were less likely to believe that garlic could cure hypertension. This widely researched supplement has been shown to have blood pressure lowering properties comparable to the common antihypertensive drugs (Chobanian et al. 2003; Mc Innes 2005). However, further understanding of the supplement may be required before it can be fully utilised as a hypertensive agent alternative.

CONCLUSION

The aim of the study was successfully achieved. The lack of significant associations between knowledge, awareness and attitude of the Malaysian urban population towards garlic supplement, could be due to the limited sample size of the study. Although the use of complementary medicine is common among Asians, knowledge of garlic as an alternative treatment was found to be lacking. In view of this, garlic should be given more publicity in Malaysia so that it can be utilised as a non-pharmacological treatment for hypertension. Nevertheless, the public should be mindful about the interaction of garlic with other drugs and appropriate education and counseling should be given prior to garlic use.

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