

THE USAGE OF COMPLEMENTARY AND ALTERNATIVE MEDICINE (CAM): PREVALENCE, HEALTH LITERACY, BELIEFS AND SELF-MANAGEMENT AMONG PEOPLE WITH HYPERTENSION IN A RURAL AREA, PAHANG

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Abstract

Complementary and Alternative Medicine (CAM) is believed to have had health benefits in treating hypertension in past decades, especially in rural areas. However, CAM is often not supported by scientific evidence. Thus, awareness of the possible toxicity of CAM in the self-management of health is crucial. This study aims to identify CAM users' prevalence, beliefs, health literacy, and examine the associated factors for the self-management of hypertension. This cross-sectional study used a set of questionnaires consisting of demographic data, health-related characteristics, the Montana State University CAM Health Literacy Scale, the Hypertension Self-Care Activity Level Effect (H-SCALE), and the Beliefs About Medicine Questionnaire (BMQ). The study employed simple random sampling, and it was conducted in four health clinics located in Jerantut, Pahang, from January 2021 to May 2021. The analysis involved a total of 233 hypertensive patients. The study found that 60.9% (n = 142) of the participants used CAM within the last 12 months to treat hypertension, with herbs (n = 71, 50%) being the most preferred alternative medication. Most of the respondents had adequate health literacy regarding CAM usage (mean 44.50 ± 5.67) and held a positive perception toward CAM with Specific-Necessity (mean 17.61 ± 2.91) higher than Specific-Concern (mean 15.02 ± 3.40). The results showed that 96.1% (n = 224) reported adherence to alcohol cessation, 65.7% (n = 153) reported adherence to taking medication, 62.7% (n = 146) reported adherence to quitting smoking, 39.9% (n = 93) reported adherence to good weight management, 25.3% (n = 59) reported adherence to active physical activity, and only 14.2% (n = 33) reported adherence to take a healthy diet. The results of multiple logistic regression analysis showed that the female gender was linked to non-adherence with taking medication while having higher health literacy was related to greater adherence to medication. The study also found that female gender was associated with non-adherence with quitting smoking, which was accompanied by a higher belief about medication specific-necessity. In contrast, older age was related to better adherence to quitting smoking. Factors such as being female, having longer disease duration, and having higher health literacy were associated with non-adherence with weight management, while having formal education and a stronger belief in the importance of specific medication were linked to greater adherence to weight management. The study found that a higher belief in the importance of specific medication and being female were related to non-adherence with quitting alcohol use. This study may provide a better understanding of CAM usage among people with hypertension with significant concerns over safety and interaction with the standards prescribed treatment. Further intervention is needed to decrease the possibility of complications and optimize self-management of hypertension with the use of CAM.

Keywords: Beliefs about Medicine, Complementary and Alternative Medicine (CAM), Health Literacy, Hypertension, Self-Management of Health

Introduction

Hypertension is a widespread health problem worldwide and a leading cause of the cardiovascular disease (1). According to the World Health Organization (WHO), the number of patients diagnosed with hypertension is expected to increase by about 60%, reaching up to 1.56 billion by 2025, with Asia contributing significantly to this patient population (2). In Malaysia, the overall prevalence of hypertension among adults in 2019 was 30%, affecting 6.4 million individuals. Notably, hypertension was three times more prevalent in males than in females for those below 30 years of age (3). Additionally, the prevalence of hypertension was higher among individuals living in rural areas than those in urban areas, with rates of 39.3% compared to 34.2% in 2015 and 36.6% versus 32.7% in 2011 (4).

Complementary and alternative medicine (CAM) products are commonly used by hypertensive patients as a measure to control their condition, often in combination with conventional medical treatment (5). Previous studies conducted in Malaysia found that CAM use was prevalent among individuals with hypertension, ranging from 45.0% to 62.6% (6-8). Among the various CAM types used, biological or natural products were the most commonly used, with products such as garlic, honey, Misai Kucing, bitter melon, and Ginkgo Biloba being used to treat hypertension (7-9).

The use of CAM among hypertensive patients can be attributed to a low level of belief and concern about the harmful effects of conventional hypertensive medication (10). The belief among most CAM users that biological and natural products are safer and more effective than conventional medicine may contribute to poor medication adherence (7). However, the use of CAM without competent health literacy and adequate supervision by a qualified healthcare provider can increase the risk of potential CAM and conventional medicine interactions, particularly with garlic, ginkgo, ginseng, and combinations of these products with blood-thinning drugs such as aspirin and warfarin, leading to adverse reactions (11). Moreover, the low disclosure of CAM use to healthcare providers further complicates the risk of interactions. The reasons for this include forgetting to mention CAM use, a lack of relevance of disclosure, healthcare providers not asking about CAM use, and the lack of respect for the value of CAM (11).

Understanding the health beliefs of patients with hypertension is crucial to promote medication adherence, as a lack of belief in medication can significantly increase the rate of non-adherence. It is therefore important to investigate patients' beliefs about their prescribed medication and their use of complementary and alternative medicine (CAM) or non-prescribed medication, as this can shed light on the reasons for low adherence among hypertensive patients (12). Health literacy also plays a key role in patients' self-care decisions, especially when it comes to using CAM for hypertension management.

A study by Abdullah et al. (13) conducted in Malaysia highlights the need for more comprehensive assessments of health literacy, particularly with regard to CAM, to address the potential risks of toxicity and complications.

CAM use is widespread among hypertensive patients, and it is often reinforced by cultural factors, beliefs, social relationships, and the perception that natural products are safe and effective (5). However, many types of CAM are not developed according to modern scientific standards, making it difficult to objectively and unbiasedly evaluate their safety and efficacy (6). As a result, the use of CAM may undermine the success of self-management of hypertension and lead to increased non-adherence to self-care activities, including prescribed medication. This study aims to investigate the prevalence, beliefs, and health literacy of CAM users and to explore the relationships between demographic data, health-related characteristics, beliefs, and health literacy with respect to CAM use and self-management of hypertension among individuals living in the Pahang National Park and nearby village areas of the Jerantut district.

Materials and Methods

This cross-sectional study was conducted at health clinics in Pahang National Park and nearby village areas in the Jerantut district of Pahang. Pahang National Park, also known as National Park Kuala Tahan, is located in Taman Negara National Park and covers 4,343 square kilometres of forested land. Four health clinics were identified as being located closest to Pahang National Park and nearby village areas (within a 25km distance), namely Klinik Kesihatan Kuala Tahan, Klinik Kesihatan Kg Bantal, Klinik Kesihatan Kuala Tembeling, and Klinik Kesihatan Padang Piol. The accessibility of various herbs was one of the reasons why this study was conducted in Pahang National Park, which is known for its rich biodiversity and is home to many species of plants and herbs traditionally used for medicinal purposes. The study location was also chosen in part due to the presence of health clinics that provided mobile health services to reach indigenous populations living in remote and rural areas.

As of October 2020, the four clinics had 495 registered hypertension patients. The clinics operate twice a week, with an estimated 20 to 25 patients per day for each clinic. Simple random sampling was used among patients with hypertension aged 18 and above who were treated in the clinics during the study period. Proportionate sampling was then used to determine the number of respondents from each clinic based on their number relative to the entire study population. A total of 246 respondents were recruited from January 2021 to May 2021.

A set of questionnaires has been used to answer the research objectives in this study consisting of five sections:

Part-1 Demographic data consists of age, race, gender, education level, occupation, and marital status.

Part-2 Health-related characteristics such as disease duration, smoking habits, alcohol use, treatment of hypertension, Body Mass Index (BMI), blood pressure, current history of CAM use related to hypertension, satisfaction and types of CAM use related to hypertension,

Part-3 The Montana State University (MSU) complementary and alternative medicine (CAM) Health Literacy Scale has been adopted in this study (14). This validated scale consists of 21 items. The instrument was developed as a screening tool for rural older adults at risk for limitations in health literacy. The total score is obtained by summing the values of the 21 items, with a possible range of 21-84. Higher scores indicate a greater level of CAM Health Literacy.

Part-4 Hypertension Self-Care Activity Level Effect (H-SCALE). This validated question focused on evaluating the respondent’s adherence to self-management and consisted of 33 items, divided into six subscales which are: Medication (3 items), Dietary Approach to Stop Hypertension Questionnaire (DASH-Q) (11 items; items 4-14), Physical activity (2 items; 15 and 16), Smoking (2 items; 19 and 20). Weight Management (10 items; 21-30) and Alcohol (3 items; 31-33) (15).

Part 5 – The Beliefs about Medicine (BMQ) has been adopted by Tan et al. (10). This validated questionnaire consists of 18 items and is divided into two sections. The BMQ Specific (10 items; 1-10) was used to assess patients’ beliefs toward the necessity of medication and the danger and toxicity of medication, with a specific focus on CAM use in hypertension treatment. The BMQ General (8 items; 11-18) assesses the patient’s belief about pharmacology management by the general practitioner and evaluates the belief of harmfulness caused by medication (General-Harm, 4 items; 15-18). A higher score indicates a stronger belief and concern in the concept reflected for each assessment part.

A face-to-face interview was conducted with the respondents who were waiting to be seen by a medical doctor at the clinic. The purpose of the study was explained to them, and consent was obtained.

Data analysis

All statistical analyses were performed using IBM SPSS version 24.0. For descriptive data, percentages, mean, and standard deviation were used. Multiple Logistic Regression has been used to assess the relationship between the variables. Inferential analyses have been presented as 95% confidence intervals (95% confidence interval CI), and a *p*-value of less than 0.05 is considered statistically significant throughout the analysis.

Results

Demographic characteristics of respondents

A total of 233 patients with hypertension participated in this study. More than half of the respondents were 60

years old and above (n = 153, 65.7%), with a mean age was 61.13 (± 10.74) years, and the mean for disease duration was 8.72 (± 7.12) years. The majority of the respondents were Malays (n = 215, 92.3%), female (n = 134, 57.5%), attending secondary school (n = 104, 44.6%), not working (n = 118, 50.6%), and married (n = 224, 96.1%). Most of them reported not smoking (n = 165, 70.8%), not taking alcohol (n = 220, 94.4%), consistent with the treatment for hypertension (n = 224, 96.1%), having normal BMI (n = 95, 40.1%) and controlled blood pressure level (n = 130, 55.8%). Further information on the demographic and health-related characteristics is shown in Table 1.

Table 1: Demographic data and health-related characteristics of respondents

Variables	Frequency	Percentage (%)
n = 233		
Age Mean ± SD	61.13 ± 10.74	
60 and above	153	65.7
Less than 60	80	34.3
Disease duration (HPT) Mean ± SD	8.72 ± 7.12	
Race		
Malay	215	92.3
Indian	3	1.3
Chinese	14	6.0
Orang Asli	1	0.4
Gender		
Male	99	42.5
Female	134	57.5
Educational		
No	33	14.2
Primary	74	31.8
Secondary	104	44.6
Tertiary	22	9.4
Occupation		
Not working	118	50.6
Government	25	10.7
Self- employed	69	29.6
Private sector	21	9.0
Marital Status		
Single	9	3.9
Married	224	96.1
Smoking Habits		
Never	165	70.8
Already quit for > 6 months	26	11.2
Active	42	18.0

Table 1: Demographic data and health-related characteristics of respondents (Continued)

Variables	Frequency	Percentage (%)
	n = 233	
Alcohol Use		
Never	220	94.4
Already quit for > 6 months	5	2.1
Occasional User	8	3.4
Chronic User	0	0.0
Receive Continuous treatment for HPT		
Yes	224	96.1
No	9	3.9
Body Mass Index		
Normal (≥ 18.5 but < 25)	95	40.1
Underweight (< 18.5)	8	3.7
Overweight (≥ 25 but < 30)	82	35.2
Obese (≥ 30)	48	21.0
Blood Pressure (BP)		
Controlled BP	130	55.8
Uncontrolled BP	103	44.2

Prevalence of CAM

As indicated in Table 2, the prevalence of CAM used within the last 12 months to treat hypertension among respondents in three health clinics in Pahang National Park and nearby village areas is 60.9%, with a frequency of 142. Of 142, a total of 138 participants claimed satisfaction with CAM (n = 138, 97.2%) among those CAM users, leaving 4 (2.8%) participants choosing no satisfaction with CAM used to treat Hypertension. Most of the CAM users over Pahang National Park and nearby village areas used herbs (n = 71, 50.0%) to treat Hypertension.

Table 2: Prevalence of CAM

Variables	Frequency (n)	Percentage (%)
	n = 233	
CAM Use Within Last 12 Months		
Yes	142	60.9
No	91	39.1
	n = 142	
CAM satisfaction		
Yes	138	97.2
No	4	2.8

Table 2: Prevalence of CAM (continued)

Types of CAM Used	Frequency (n)	Percentage (%)
Herbs	71	50.0
Vitamin & Supplement	40	28.2
Body movement	10	7.0
Diet based therapy	7	4.9
Massage therapy	6	4.2
Tai Chi	3	2.1
Cupping	2	1.4
Homoeopathy	2	1.4
Prayer	1	0.7

Health literacy of CAM and beliefs about CAM

The result shown in Table 3 presented that most of the respondents have an adequate score of health literacy towards the use of CAM (mean 44.50 ± 5.67). The finding revealed the respondents' total score of health literacy at a minimum score of 24 and a maximum score of 53. A descriptive analysis of the beliefs about the medication questionnaire is also presented in Table 3. The overall mean scores for each subscale of the Malay-translated version of BMQ were as follows: BMQ Specific-Necessity (mean 17.61 ± 2.91); BMQ Specific-Concerns (mean 15.02 ± 3.40); BMQ General-Overuse (mean 13.50 ± 2.26) and BMQ General-Harm (mean 10.91 ± 2.48). Results of each scale of the instruments showed respondents had moderate belief in the BMQ Specific-Necessity, BMQ Specific-Concerns, and BMQ General-Overuse and had a lower belief toward BMQ General-Harm.

Table 3: Level of CAM health literacy and beliefs about CAM

Variables	Mean \pm SD	Minimum Score	Maximum Score
Health Literacy	44.50 ± 5.67	24.00	53.00
BMQ Specific-Necessity	17.61 ± 2.91	10.00	25.00
BMQ Specific-Concerns	15.02 ± 3.40	5.00	24.00
BMQ General-Overuse	13.50 ± 2.26	8.00	20.00
BMQ General-Harm	10.91 ± 2.48	7.00	20.00

Hypertension self-care activities

The level of individual hypertension self-care activities is shown in Table 4. Results showed that 96.1% (n = 224) of

the respondents adhered to alcohol abstinence, while more than half of the sample ($n = 153$, 65.7%) reported adhering to hypertension medication regimes. Almost three-fourths were non-smokers ($n = 146$, 62.7%). Less than half ($n = 93$, 39.9%) of respondents followed good weight management practices, and 25.3% ($n = 59$) engaged in physical activity and some exercise on most days of the week. Only 14.2% ($n = 33$) of respondents followed DASH or ate a healthy, low-fat, and low-salt diet on most days of the week.

Table 4. Level of hypertension self-care activities (N = 233)

	Mean \pm SD	Min. Score	Max. Score	Adherence % (n)
Self-care activities				
Medication Adherence	18.79 \pm 3.59	6.00	21.00	65.7 (153)
Dietary Approach to Stop Hypertension (DASH)	39.09 \pm 10.61	4.00	63.00	14.2 (33)
Physical activity	4.99 \pm 4.44	0.00	14.00	25.3 (59)
Non-smoking	3.43 \pm 5.06	2.00	14.00	62.7 (146)
Weight management	38.12 \pm 5.25	27.00	50.00	39.9 (93)
Alcohol abstinence	0.22 \pm 1.17	0.00	8.00	96.1 (224)

Factors associated with hypertension self-care activities

In this study, direct logistic regression was performed to assess the relationship of several variables (age, gender, education, marital status, BMI, disease duration, use of CAM, BP, health literacy of CAM, and beliefs specific necessity) towards six hypertension self-care activities. Simple logistic regression was first used to determine the important independent variables associated with all six self-care activities. Multiple logistic regression was then used to derive odds ratios (ORs) for the relationship between self-care activities and the selected variable. From the results, as shown in Table 5, respondents with a greater level of health literacy were around 1.08 times more likely to report adherence than those with a low level of health literacy. The odds ratio for gender was 0.50, indicating that female respondents were 0.50 times more likely to be less adherent to medication than males. For smoking cessation, results indicated that increasing age among respondents was 1.03 times more likely to report adherence to smoking cessation than young respondents. However, respondents with a higher level of beliefs were 0.88 times more likely to be less adherent to smoking cessation, and female respondents were 0.52 times more

likely to be less adherent to smoking cessation activities than males.

For weight management, respondents who had formal education were about three times more likely to report adherence to weight management practices than those without formal education. Apart from that, an increasing level of beliefs about medication specific-necessity was 1.17 times more likely to adhere to weight management than those with inadequate beliefs about medication specific-necessity. Nevertheless, an increasing level of health literacy among the respondents was 0.87 times more likely to be less adherent to weight management components than those with a greater level of health literacy and female respondents were 0.30 times more likely to be less adherent to weight management components than male. Besides, respondents with longer disease duration were 0.92 times less likely to report non-adherence to weight management.

While for alcohol cessation, results indicated that respondents with an increasing level of beliefs about medication specific-necessity were 0.65 times more likely to be less adherent to alcohol cessation than those with a low level of beliefs about medication specific-necessity and female respondents were 0.09 times more likely to be less adherent to alcohol cessation as compared to male respondents. However, no associated significant factors were found to be related to DASH and physical activity.

Discussion

The results of the study indicate a high prevalence of CAM use among individuals with hypertension in the studied population. This prevalence is higher than that reported in previous studies conducted in this country on the same topic (6, 16). The reason for the higher prevalence of CAM use in this study can be attributed to the demographic data of the respondents, where the majority were Malay and over 60 years old. It has been reported that Malay ethnicity, particularly among females and older people with hypertension (17), is associated with higher usage of CAM in their treatments. The rate of respondents' satisfaction with CAM usage in this study was similar to the study done by Teo et al. (18). Most respondents in the study used herbs to treat hypertension, which is consistent with previous research (19, 20). It is a common practice worldwide and in this country for individuals to use both antihypertensive medications and herbal medicines in conjunction (17).

In terms of health literacy, the study findings indicate relatively low scores compared to previous local studies reporting high literacy scores of CAM use among patients with chronic diseases (21). However, the findings of this study are comparable to those of a study by Bains and Egede (22), who reported that 75% of their respondents had adequate health literacy regarding CAM. The lower levels of health literacy in this study may be due to the population sample, where a significant proportion (14.2%) had no formal education since primary school,

Table 5: Factors associated with adherence to self-care activities among people with hypertension

Self-care activities	Variables	Crude OR ^a (95% CI)	Adjusted OR ^b (95% CI)	Wald statistics ^b (df)	p value ^b
Medication Adherence					
	Gender				
	Male	1.00	1.00		
	Female	0.91 (0.50, 1.65)	0.50 (0.29, 0.88)	5.71 (1)	0.017
	Health Literacy	1.00 (1.00, 1.06)	1.08 (1.03, 1.14)	9.68 (1)	0.002
Smoking Cessation					
	Age	1.02 (1.00, 1.05)	1.03 (1.00, 1.05)	4.01	0.045
	Gender				
	Male	1.00	1.00		
	Female	0.55 (0.32, 0.94)	0.52 (0.30, 0.91)	5.27 (1)	0.022
	Beliefs	0.88 (0.80, 0.97)	0.88 (0.79, 0.97)	6.69 (1)	0.010
Weight Management					
	Gender				
	Male	1.00	1.00		
	Female	0.45 (0.26, 0.79)	0.30 (0.16, 0.57)	13.64 (1)	0.001
	Education				
	Informal	1.00	1.00		
	Formal	3.47 (1.37, 8.76)	3.38 (1.20, 9.54)	5.31 (1)	0.021
	Disease Duration	0.95 (0.91, 1.00)	0.92 (0.87, 0.97)	9.50 (1)	0.002
	Health Literacy	0.90 (0.84, 0.94)	0.87 (0.82, 0.92)	20.91 (1)	0.001
	Beliefs	1.14 (1.04, 1.26)	1.17 (1.04, 1.31)	7.33 (1)	0.007
Alcohol Cessation					
	Gender				
	Male	1.00	1.00		
	Female	0.09 (0.01, 0.70)	0.09 (0.01, 0.76)	4.92 (1)	0.027
	Beliefs	0.62 (0.45, 0.85)	0.63 (0.46, 0.88)	7.61 (1)	0.006

^aSimple Logistic Regression, ^bMultiple Logistic Regression

The model reasonably fits well. Model assumptions are met. There are no interaction and multicollinearity problems.

and the majority (44.6%) had only a secondary level of education. As reported by Adams et al. (23), poor health literacy is significantly associated with less education, and hypertensive patients with less education may have difficulty understanding the importance of health information given to them. Additionally, age is a key determinant of CAM user health literacy. Older adults (aged over 55 years) living in rural areas with low education having a higher rate of inadequate or marginal health literacy (24).

The study's high mean score for the BMQ Specific-Necessity compared to the BMQ Specific-Concerns subscale supports previous research indicating that Malaysian patients, particularly those of Malay ethnicity,

commonly use CAM to manage their hypertension, even when prescribed antihypertensive medication by their physician (25). However, the respondents also believed the antihypertensive medication was crucial for positive outcomes and preventing complications. On the general part of the instrument, the study found that the mean of the BMQ General-Overuse was greater than the BMQ General-Harm, indicating patients' concerns about medication combinations to treat their illness and their belief that it is overused (26). These findings are consistent with previous local studies, which suggest that patients may have concerns about medication side effects, leading them to seek alternative treatments, but still recognize the importance of antihypertensive medication in managing their hypertension (10, 27). The use of both CAM and

medication concurrently is common among people with hypertension who have firm beliefs in both treatment modalities.

Given that the majority of respondents were Malays who practice Islam, in which consuming alcohol is prohibited, it is unsurprising that the prevalence rate of alcohol abstinence activities was high. In other words, the high prevalence rate of alcohol abstinence activities among the respondents was to be expected due to religious and cultural factors. Demographic factors once again played a significant role in these results. The medication adherence rate found in this study was relatively high compared to a local study conducted by Ramli et al. (28), which reported a medication adherence rate of 53.4% from 653 patients sampled in the Primary Health Clinics of the Ministry of Health Malaysia. The findings of this study are also supported by the results of the BMQ medication-necessity subscale, which recorded a higher score than the medication-concern subscale, indicating a higher medication adherence rate among the respondents. Rates of smoking cessation adherence were high in this study compared to previous studies that reported 50.2% adherence to non-smoking activities (29). Both active and passive smoking activities had been known to have a negative effect on hypertension, with heart rate and blood pressure increasing during smoking activities (30). Following good weight management practices, less than half of the respondents reported compliance with these self-care activities. These results were higher compared to a study done by Haung et al. (29) among respondents in rural areas. This is fortunate for hypertension treatment among the respondents since it takes modest weight loss (5% to 10%) to improve both blood pressure and "good" cholesterol level (31). Respondents also showed a lack of awareness of the benefits of active physical activity for their health, which is consistent with previous studies (32). Of concern is this respondent's low prevalence rate associated with DASH components of self-care activities (14.2%). However, this prevalence was higher than in previous studies by Fazel et al. (32) with 12.3% and Haung et al. (29) with a 2.7% of adherence rate among their respondents. The DASH activities require limiting sugar and salt intake, including a fat-free or low-fat diet, and consuming 5 to 6 servings of fruits and vegetables daily.

In contrast to previous local studies, the results of this study present a different perspective where females were more likely to be non-adherent to hypertensive medication than males (33). However, this finding is comparable to a study by Chen et al. (34) that reported females were more likely to be non-adherent to medication, possibly due to moderate beliefs and poor knowledge of the medication's side effects. These study findings on the increased health literacy about CAM related to being more likely to adhere to hypertensive medication were in line with results from previous studies (35, 36). The results showed that health literacy skills are not only associated with CAM knowledge among the respondents but also with disease knowledge

and self-management which emphasizes the importance of taking hypertensive medication as prescribed.

In terms of smoking cessation, this study's results were incomparable to previous local studies that reported males were associated with high non-adherence to smoking cessation (37). However, the findings were similar to a study by Mersha et al. (38) that found males with greater age and educational status were likely to be adherent to smoking cessation, possibly due to a higher chance of relapse among female smokers. Further research is needed to determine the association between smoking and beliefs to improve hypertension self-management, particularly in smoking cessation.

The study's findings on weight management were incomparable in terms of gender to previous studies that reported women were more likely to attempt weight loss and join weight loss programs (39). Furthermore, female respondents were more likely to adhere to weight management factors due to the greater severity of obesity-related health consequences (40). However, a study by Nawawi, H (41) reported that older people and women were more likely to be non-adherent to weight management practices. Those findings also show that respondents with non-adherence to weight management had longer disease duration as they aged and the disease advanced. In a study done to assess whether health literacy acts as a determinant of obesity in adults, there is significant evidence that health literacy knowledge and skills determine the consequent management of obesity and BMI rates in adult populations (42). However, the results of this study reported that respondents with higher literacy about CAM were likely to non-adhere to recommended weight management practices. This showed that respondents with a higher level of health literacy of CAM were not entirely literate in disease and its management, particularly in weight management and dietary intake. The findings of this study on weight management adherence among respondents having formal education were in line with the results from previous studies, which reported that respondents having formal education were well engaged in weight management programs (43). These findings show the importance of having knowledge and information among people with hypertension to maintain or lose weight and also to prevent weight gain. However, this study did not find any previous research linking beliefs about medication to adherence in weight management, as this relationship has not been previously explored in this field.

In terms of alcohol cessation, beliefs about medication-specific necessity and gender were reported as significant factors, with females and those with a high level of beliefs about medication-specific necessity more likely to be non-adherent to alcohol cessation. While studies generally show that males are more likely than females to drink heavily, some suggest that this gender gap may be narrowing (40). None of the respondents in this study were

reported as heavy drinkers, but the high number of female respondents suggests a need for further investigation.

One of the study's limitations was the data collection process, which only collected 233 out of a total of 260 samples. Indigenous respondents were also underrepresented due to limited clinic access and restricted mobile clinic services during the COVID-19 pandemic. Additionally, the findings concerning complementary and alternative medicine use may not be representative since the study was conducted in only one district and four health clinics in rural areas. A multicentre and larger-scale study that includes more diverse respondents is required to provide more precise results. Finally, since the study is cross-sectional and relies on self-reported assessments, under-reporting is possible.

Conclusion

The results of the current study demonstrate a higher prevalence of CAM use among people with hypertension in rural areas, with herbal remedies being the most commonly used type of CAM. The majority of respondents reported being satisfied with the effectiveness of CAM. Most respondents had adequate health literacy regarding the use of CAM to treat their hypertension. Generally, respondents believed in the benefits of CAM and perceived medicine as necessary for their health. However, most of them were also concerned about the adverse effects of drugs and felt that doctors relied too much on medicine.

Regarding self-management of hypertension, respondents demonstrated good adherence to medication regimes, smoking cessation, and alcohol abstinence but poor adherence to other self-care activities, particularly the DASH component. Females were associated with non-adherence to medication and smoking cessation components, and respondents with a higher level of beliefs were also associated with non-adherence to these activities. Increasing health literacy and longer disease duration were associated with non-adherence to weight management activities. Furthermore, females and respondents with a higher level of beliefs were associated with non-adherence to alcohol cessation.

It is crucial for the government and healthcare institutions to address this issue and provide interventions to decrease the possibility of complications and optimize self-management of hypertension among people using CAM, thus reducing the healthcare burden in the future. Currently, there is no conclusive evidence that traditional medicine produces sustained reductions in BP with good clinical outcomes. Therefore, further interventions are necessary to optimize the self-management of hypertension with the use of CAM.

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Competing interests

The authors declare that they have no competing interests.

Ethical clearance

The study was approved by the Research Ethics Committee of Universiti Teknologi MARA (REC/07/2020(MR/134), Malaysia Research Ethics Committee (MREC), Ministry of Health Malaysia (NMRR-20-1111-55174) and Jabatan Kemajuan Orang Asli Malaysia (JAKOA) [(Reference: JAKOA/PP.30.032Ljd48(16), Date: 9 March 2020)].

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