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Factors Associated with the Use of Complementary and Alternative Medicine among Elderly Registered with Elderly Activity Centre in the Klang Valley

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ABSTRACT

Elderly individuals increasingly use complementary and alternative medicine (CAM) due to greater availability, but uncontrolled use can be unsafe. This study determined factors associated with CAM use among the elderly in the Klang Valley using the Theory of Planned Behaviour (TPB). A cross-sectional study was conducted among elderly individuals registered with *Pusat Aktiviti Warga Emas* (PAWE). Respondents were selected via simple random sampling, and data were collected using a self-administered questionnaire. Ethical approval was obtained from the Universiti Putra Malaysia Ethics Committee. The prevalence of CAM use was 64.3%. Common reasons included improving bodily performance, ingestion as the primary type, family or friends as the main information sources, and purchase at shops as the preferred method. Factors associated with CAM use included education level, spouse status, employment status, income level, and constructs of the Theory of Planned Behaviour (attitude, subjective norm, and perceived behavioural control). Higher education (AOR: 1.929, 95% CI: 1.100 - 3.385) and perceived behavioural control (AOR: 1.861, 95% CI: 1.475–2.347) were significant predictors of CAM use. It is recommended that healthcare providers receive adequate training on CAM use as Malaysia transitions to an aged population.

Keywords: Complementary and alternative medicine, elderly, theory of planned behaviour

INTRODUCTION

The use of complementary and alternative medicine (CAM) in Malaysia is widespread, with estimates ranging from 29% to 65%. This indicates that nearly one in three to almost 70% of Malaysians use CAM. Several studies highlight this trend across different groups. Among chronic kidney disease patients, 29% reported using CAM

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in the past year (Yusuf et al., 2019). A study in Tumpat, Kelantan, found that 51.4% of women used herbal medicine during pregnancy (Rahman et al., 2008). Among cancer patients, 60.8% used CAM (Salleh et al., 2021). Additionally, a study among non-urban populations reported a 65.3% CAM usage rate (Teow et al., 2021). CAM use among the elderly is particularly concerning due to chronic non-communicable diseases (NCDs), polypharmacy, and limited awareness of its risks and benefits. Studies show that CAM is more prevalent among the elderly, with odds ratios (OR) ranging from 1.15 to 1.75, indicating an increased likelihood compared to younger populations (Abdullah et al., 2018).

Unregulated use of complementary and alternative medicine (CAM) carries significant risks. For instance, delayed diagnosis and treatment have been observed in cancer patients using CAM (Chui et al., 2014; Mujar et al., 2017), while epilepsy patients who used CAM were more likely to be non-adherent to prescribed medications (Farrukh et al., 2021). Furthermore, studies involving elderly individuals and hypertensive patients in Malaysia reported a high prevalence of non-disclosure of CAM use to doctors (Joachimdass et al., 2021; Wahab et al., 2021). Among 102,461 adverse drug reaction (ADR) reports submitted to Malaysia's National Pharmaceutical Regulatory Agency (NPRA), 140 cases (0.14%) of acute kidney injury (AKI) were linked to traditional and complementary medicine (TCM) products, with 72.7% of these products being unregistered. Non-disclosure of CAM use to healthcare providers, particularly among elderly and hypertensive patients, has been associated with treatment complications (Lee et al., 2020). Additionally, the financial burden of CAM is significant. In a study of cancer patients, out-of-pocket (OOP) spending on CAM accounted for 42.9% of healthcare costs in upper-middle-income countries, increasing the risk of financial catastrophe (AOR: 1.52, 95% CI: 1.23–1.88) and medical impoverishment (AOR: 1.75, 95% CI: 1.36–2.24) (Kong et al., 2022).

Given Malaysia's aging population, more research is needed on CAM use, especially in urban areas. This will help inform strategies by the Ministry of Health and other stakeholders to ensure the safe and effective use of CAM, improving health outcomes and protecting against adverse effects.

METHODOLOGY

This cross-sectional study was conducted among elderly individuals registered at *Pusat Aktiviti Warga Emas* (PAWE), an Elderly Activity Centre in the Klang Valley, Malaysia. The study population was drawn from 15 PAWE centres that were chosen for this research. The study employed a self-administered questionnaire consisting of 31 questions, which were divided into three sections: socio-demographic details, Theory of Planned Behaviour (TPB) constructs (attitude, subjective norms, and perceived behavioural control), and CAM usage patterns. The socio-demographic and CAM pattern questions were developed based on existing literature, while the TPB construct questions were adapted from Ng et al. (2022).

The TPB section utilized a 7-point Likert scale, and the overall scores for each construct were calculated. Validity and reliability were ensured through content validation by public health experts, with a Content Validity Index (CVI) of 0.9, and back-to-back translation of the questionnaire. A pilot test with 30 elderly individuals confirmed the questionnaire's reliability, with Cronbach's Alpha scores for attitude (0.857), subjective norm (0.926), and perceived behavioural control (0.834).

RESULTS

Of the 319 respondents, females made up the majority (86.2%, n = 275). A total of 64.3% (n = 205) of respondents reported using CAM (Table 1). Table 2 showed the socio - demographic characteristics of the respondents. The largest ethnic group was Malay (86.8%, n = 277), and most respondents were Muslim (87.8%, n = 280). Education levels varied, with 60.8% (n = 194) having secondary education. The median age of respondents was 67 years, and the median monthly household income was RM 1100.

Health issues were prevalent among respondents as shown in Table 3, with 86.2% (n = 275) reporting at least one medical condition. The most common conditions included hypercholesterolemia (62.2%, n = 171), hypertension (60.4%, n = 166), and diabetes (39.3%, n = 108). Regarding the TPB constructs, respondents generally had a positive attitude toward CAM (mean score of 4.50±1.14). Subjective norm,

Table 1
Prevalence of CAM use

CAM use	Frequency	Percent (%)
Yes	205	64.3
No	114	35.7

Table 2
Socio - Demographic characteristics of respondents (N = 319)

Variables	Frequency Median (IQR)	Percent (%)/ Range
Age	67 (7)	60 - 83
Sex		
Male	44	13.8
Female	275	86.2
Ethnicity		
Malay	277	86.8
Chinese	31	9.7
Indian	10	3.1
Others	1	0.3
Religion		
Islam	280	87.8
Buddha	26	8.2
Hindu	10	3.1
Christian	2	0.6
Others	1	0.3
Education Level		
Tertiary education	33	10.3
Secondary education	194	60.8
Primary education	86	27.0
No formal education	6	1.9
Having a Spouse		
Coupled	161	50.5
Single (divorced, widowed, single)	158	49.5
Employment status		
Public servant	0	0
Private sector	9	2.8
Self-employed	25	7.8
Pensioner	114	35.7
Unemployed	171	53.6
Monthly Household Income (RM)	1100.00 (1400.00)	100.00 - 20 000.00

which reflects the influence of family and friends on CAM use, had the lowest mean score (4.26±1.54). Perceived behavioural control (PBC), which indicates one's belief in their ability to control CAM use, had the highest mean score (4.59±1.54) (Table 4).

Table 5 shows the pattern of CAM use among the respondents. The primary reason for CAM use was to improve bodily performance (68.8%, n = 141), followed by recommendations from family and friends (46.3%, n = 95) and health personnel (42.9%, n = 88). In terms of usage patterns, 55.6% (n = 114) used more than one type of CAM, with multivitamins (49.8%, n = 102), olive oil (33.2%, n = 68), and traditional herbs (23.4%, n = 51) being the most common. Purchasing CAM at shops was the most common method (38.5%, n = 79), with a median monthly expenditure of RM 100. Family and friends were the main sources of CAM information (69.3%, n = 142).

Table 6 and Table 7 presents the results of the bivariate analysis examining the relationship between socio-demographic

Table 3
Medical issues reported (N = 275)

Variables	Frequency (n)	Percent (%)
Medical Issues		
Yes	275	86.2
No	44	13.8
Lists of Medical Issues		
Hypercholesterolemia	171	62.2
Hypertension	166	60.4
Diabetes Mellitus	108	39.3
Arthritis	89	32.4
Heart Disease	26	9.5
Obesity	18	6.5
Asthma	16	5.8
Malaise	15	5.5
Cancer	10	3.6
Gout	7	2.5
Others	19	6.9
Erectile Dysfunction	0	0.0

Table 4
Average mean score of PTB constructs item (N = 319)

Constructs	Item	Mean Score ± SD	Average Mean Score ± SD
Attitude			4.50 ± 1.14
A 1	I extremely trust CAM.	4.52 ± 1.52	
A 2	I am very concerned about CAM.	4.48 ± 1.55	
A 3	I'd very much like to accept CAM concept	4.56 ± 1.50	
A 4	I think CAM is effective.	4.42 ± 1.49	
A 5	I think CAM is safe.	4.39 ± 1.61	
A 6	I think CAM has few side effects.	4.45 ± 1.52	
Subjective Norm			4.26 ± 1.54
SN 1	My family and friends support me to choose CAM.	4.26 ± 1.54	
SN 2	My family and friends think I should choose CAM.	4.24 ± 1.55	
SN 3	My family and friends will choose CAM.	4.26 ± 1.56	
SN 4	If my family and friends choose CAM, I would make the same choice.	4.22 ± 1.67	

Table 4 *(continue)*

Constructs	Item	Mean Score ± SD	Average Mean Score ± SD
Perceived Behavioural Control			4.59 ± 1.54
PBC 1	I have time to receive CAM services.	4.59 ± 1.54	
PBC 2	I am economically capable to receive CAM services.	4.06 ± 1.64	
PBC 3	I have the ability to decide whether to choose CAM.	4.98 ± 1.60	
PBC 4	I can share my knowledge and experience of CAM with others.	4.94 ± 1.58	
PBC 5	I can overcome my difficulty in choosing CAM.	4.14 ± 1.76	

Table 5
Pattern of CAM use (N = 205)

Variables	Frequency	Percent (%)
Amount of CAM intake		
Only 1 type	91	44.4
More than 1 type	114	55.6
Reasons for CAM Use		
To improve body performance to do daily activities	141	68.8
Recommended by family and friends	95	46.3
Recommended by health personnel	88	42.9
Affordable price	85	41.5
To explore a different option	84	41.0
To improve physical and emotional well - being	82	40.0
To enhance immune function	74	36.1
Readily available	74	36.1
To reduce the risk of getting infection	72	35.1
It is much more effective compared to the other types of treatment	65	31.7
Inclined towards this form of therapy instead of using modern medicine	65	31.7
It is safe compared to the other types of treatment	54	26.3
Other reasons	2	1.0
Types of CAM Use		
Multivitamin	102	49.8
Olive Oil	68	33.2
Dancing and Movement Therapy	51	24.9
Traditional Herbs Product	48	23.4
Fish Oil	45	22.0
Breathing Technique	37	18.0
Commercial Health Juice	26	12.7
Honey	23	11.2
Music Therapy	23	11.2
Aromatherapy	20	9.8
Therapeutic Mattress	19	9.3
Bird's Nest	18	8.8

Table 5 *(continue)*

Variables	Frequency	Percent (%)
Reflexology	18	8.8
Health Supplement	15	7.3
Spiritual Healing	14	6.8
Habbatus Sauda	13	6.3
Sacha Inchi Oil	12	5.9
Taichi	12	5.9
Topical Herb Ointment	11	5.4
Massage Machine	9	4.4
Meditation	7	3.4
Detox Food	3	1.5
Chiropractic	3	1.5
Sound and Light Therapy	2	1.0
Hypnotic Therapy	2	1.0
Magnetic / Energy Bracelet	2	1.0
Reiki	2	1.0
Other Types of Ingested CAM	19	9.3
Other Types of External CAM Application	13	6.3
Other Types of CAM Practices	2	1.0
Method of getting CAM		
Buy at the shop	79	38.5
From online	63	30.7
Buy from direct seller	54	26.3
Others	38	18.5
Monthly spending on CAM (RM)	100.00 (115.00)	Range 0.00 - 600.00
Information regarding CAM		
Family and friends	142	69.3
Internet	74	36.1
Books	17	8.3
Others	18	8.8

characteristics and TPB constructs with CAM use. Factors associated with CAM use included education level ($p < 0.001$), spouse status ($p = 0.026$), employment status ($p = 0.005$), income level ($p < 0.001$), and all TPB constructs (attitude, $p < 0.001$; subjective norm, $p < 0.001$; perceived behavioural control, $p < 0.001$). Table 8 presents the multiple logistic regression analysis identifying the predictors of CAM use. The regression analysis showed that higher education (AOR: 1.929, 95% CI: 1.100 - 3.385) and perceived behavioural control (AOR: 1.861, 95% CI: 1.475 - 2.347) were significant predictors of CAM use. The model explained 21.6% of the variation in CAM use, with a fair level of discrimination (ROC curve = 0.746, $p < 0.001$).

Table 6
Bivariate analysis between socio - Demographic characteristics and CAM use

Variables	CAM Use Status		χ^2 / Z	*p*-value
	Yes n (%)	No n (%)		
Age (Median (IQR)	67 (7)		- 1.647	0.099[a]
CAM Users	67 (7)			
Non-CAM Users	68 (8)			
Sex				
Male	28 (63.6)	16 (36.4)	0.009	0.926[b]
Female	177 (64.4)	98 (35.6)		
Ethnicity				
Malay	175 (63.2)	102 (36.8)	1.081	0.298[b]
Non - Malay	30 (71.4)	12 (28.6)		
Religion				
Muslim	176 (62.9)	104 (37.1)	1.972	0.160[b]
Non-Muslim	29 (74.4)	10 (25.6)		
Education Level				
Higher (Secondary & Tertiary)	159 (70.0)	68 (30.0)	11.453	**<0.001**[b*]
Lower (Primary & No Formal)	46 (50.0)	46 (50.0)		
Having a Spouse				
Coupled	113 (70.2)	48 (29.8)	4.966	**0.026**[b*]
Single (divorced, widowed, single)	92 (58.2)	66 (41.8)		
Employment status				
Unemployed	98 (57.3)	73 (42.7)	7.760	**0.005**[b*]
Others (Pensioners & Active)	107 (72.3)	41 (27.7)		
Monthly Household Income (RM) (Median (IQR)	1100.00 (1400.00)		-3.987	**< 0.001**[a]
CAM users	1500.00 (1250.00)			
Non-CAM users	1000.00 (1000.00)			
Having Medical Issue				
Yes	181(65.8)	94 (34.2)	2.099	0.147 [b]
No	24 (54.5)	20 (45.5)		

Note. a Mann-Whitney U Test; b Chi-Square Test; * Significant at $P < 0.05$

Table 7
Bivariate analysis between theory of planned behaviour constructs and CAM use

Construct	Mean Difference (95% CI)	*t* (df)	*p*-value
Attitude	0.502 (0.246, 0.757)	3.863 (317)	< 0.001[a*]
Subjective Norm	0.720 (0.413, 1.026)	4.621 (317)	< 0.001[a*]
Perceived Behavioural Control	0.859 (0.607, 1.110)	6.715 (317)	< 0.001[a*]

Note. [a] Independent Sample T- Test; *p < 0.05

Table 8
Predictors of CAM use among the elderly

Variables	Coefficient (ß)	Adjusted OR	95% CI for Odds Ratio		p value
			Lower Bound	Upper Bound	
Intercept	-2.263				
Age	-0.009	0.991	0.937	1.049	0.762
Religion					
Non-Muslim	Ref				
Muslim	-0.717	0.488	0.215	1.109	0.087
Education					
Lower education	Ref				
Higher education	0.657	1.929	1.100	3.385	**0.022***
Having a Spouse					
Single	Ref				
Couple	0.287	1.332	0.792	2.243	0.280
Employment Status					
Unemployed	Ref				
Others	-0.232	0.793	0.456	1.379	0.411
Monthly Household Income	< 0.001	1.000	1.000	1.000	0.090
Medical Issues					
Yes	ref				
No	0.183	1.201	0.586	2.461	0.617
Average Mean Attitude Score	-0.056	0.946	0.690	1.297	0.729
Average Mean Subjective Norm Score	0.130	1.139	0.897	1.445	0.285
Average Mean Perceived Behavioural Control Score	0.621	1.861	1.475	2.347	**< 0.001***

Note. * $p < 0.05$

DISCUSSION

The study revealed a prevalence of 64.3% for CAM use among elderly respondents, which falls within the range of other studies in Malaysia. For instance, Wahab et al. (2021) found a prevalence of 45.8%, while Lee et al. (2020) reported 85.1% among elderly individuals with chronic musculoskeletal pain. In other countries such as in Saudi Arabia, a study conducted among elderly aged 60 years and older found a CAM use prevalence of 62.5% (Aljawadi et al., 2020).

Several socio-demographic factors were found to be associated with CAM use. Those with a spouse were more likely to use CAM, possibly due to the emotional and decision-making support provided by partners, a finding consistent with research by Salleh et al. (2021). Additionally, employment status and household income were significant, with retired and employed individuals showing higher rates of CAM use compared to the unemployed, a relationship supported by studies such as Zhang et al. (2007) and Wahab et al. (2021).

Within the TPB framework, attitude was a significant factor in CAM use, with higher attitude scores correlating with a more positive inclination toward CAM. This was consistent with research linking cultural beliefs and scepticism about conventional treatments to higher rates of CAM usage (Conboy et al., 2007; Jasamai et al., 2017). However, subjective norms were found to be less influential, as respondents generally rejected the idea that social influences, such as family or friends, should dictate their use of CAM. This finding stands in contrast to other studies that highlighted the predictive role of social norms in health decisions, such as Dzulkipli et al. (2017).

The study identified two key predictors of CAM use: educational level and perceived behavioural control. Individuals with higher education levels were more likely to use CAM, a trend also observed in studies by Wahab et al. (2021) and Salleh et al. (2021), where higher education was associated with greater openness to alternative treatments and higher health literacy. Perceived behavioural control, specifically the ability to manage resources and overcome barriers, was another important predictor. Although respondents generally felt they had sufficient time and freedom to make decisions about CAM, financial limitations remained a significant barrier (Ajzen & Madden, 1986; Lino et al., 2014).

CONCLUSION

Several recommendations can be proposed to improve the safe use of CAM among the elderly in urban areas. Interventions should consider sociodemographic factors such as education, marital status, employment, and income. Healthcare policies should integrate CAM into primary care, ensuring that healthcare providers are well-trained to offer informed guidance and prevent harmful interactions with conventional treatments. The Ministry of Health (MOH) should expand CAM services in primary care facilities and implement stricter regulation of CAM products, particularly those sold online, to ensure that only safe and scientifically validated products are available. Public health campaigns led by the MOH, and other ministries should raise awareness about the risks and benefits of CAM, promoting informed decision-making among the elderly. Additionally, ongoing research and evaluation of CAM practices should be incorporated into health services to ensure policies remain responsive to emerging trends in CAM use.

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