



Factors Predicting Traditional and Complementary Medicine Use Among the General Public in Malaysia

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ARTICLE INFO

Article history:

Received 23 July 2022

Revised 02 August 2022

Accepted 02 August 2022

Published online 03 August 2022

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ABSTRACT

Globally, traditional and complementary medicines (T&CM) are becoming a major source of quality medicines with increasing interest in Malaysia. This study aimed to explore the possible predictors of T&CM usage among the general public in Malaysia.

A cross-sectional survey was conducted across samples of the general public in Malaysia using a self-administered questionnaire. The participants were conveniently sampled across Malaysia between November 2018 and May 2019. The predictors of T&CM use were identified using simple and multiple logistic regression in IBM SPSS version 26.0. $p < 0.05$ was considered statistically significant.

A total of 896 participants were included in the study, of which 62.7% were T&CM users. The median score of perceived benefits towards T&CM use was significantly higher for T&CM users than non-T&CM users. Older age of 41-50 years [adjusted odds ratio (aOR): 3.33; 95% CI 1.47, 7.53], Chinese ethnicity (aOR: 2.95; 95% CI 1.97, 4.42), other ethnicities (aOR: 2.25; 95% CI 1.02, 2.58) and with higher score in the perceived benefit domain (aOR: 1.10; 95% CI 1.97, 4.42) were more likely to use T&CM ($p < 0.05$).

The study showed that the predictors of T&CM use were older age, Chinese and other ethnicities, and participants with perceived benefits of T&CM therapies. The findings may help healthcare providers and policymakers provide appropriate guidance regarding the rational and safe use of T&CM.

Keywords: Traditional medicine, Complementary medicines, Survey attitudes, Barriers, Malaysia.

Introduction

The World Health Organization (WHO) Global Report of Traditional and Complementary Medicine (T&CM) indicated that 21.0% of the respondent member states have a national plan to incorporate T&CM in health care service delivery.¹ Between 1999 to 2018 (20 years), there were more than three times increase in the member states with a national programme and almost four times increase in member states with a national policy in T&CM.¹ The T&CM is practised in nearly every country in the world and has increasing popularity in Malaysia.²⁻⁵ According to the Ministry of Health Malaysia, the practice of T&CM is defined as a “form of health-related practice across all ethnic groups, as well as homeopathy and complementary therapies but excludes medical and dental practices used by medical and dental practitioners, respectively”.⁶ In the 2019 WHO global report on T&CM, 170 (88.0%) of its surveyed member states acknowledged the use of T&CM through developing national policies, laws, regulations and programmes.¹

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Citation: Ong SC, Yeong SW, Tan BY, Ooi GS, Harun SN, Shafie AA, Hassali MA. Factors Predicting Traditional and Complementary Medicine Use Among the General Public in Malaysia. Trop J Nat Prod Res. 2022; 6(7):1165-1173. doi.org/10.26538/tjnpr/v6i7.21

Official Journal of Natural Product Research Group, Faculty of Pharmacy, University of Benin, Benin City, Nigeria.

The practice of T&CM services has been successfully incorporated into the national healthcare system in more than 15 Malaysian government hospitals.⁷ These services include traditional massage, acupuncture, shirodha, external basti therapy, varnam therapy and herbal therapy.

The demand for T&CM services was reported to be an escalating trend, with the biggest increase in the usage of herbal medicine as an adjunct treatment for cancer. Even though there is increasing popularity of T&CM use among Malaysians, there is limited consensus on the decision to inform conventional healthcare providers about the use of T&CM, especially in terms of herbal supplements. In addition, the increasing use of herbal supplements by the Malaysian public was a concern as most consumed them without informing their doctors.⁸ A meta-analysis by Foley *et al.* reported that the disclosure rate on the use of T&CM ranged between 12.0% and 59.0%.⁹ Although it is believed that health care providers could give better advice for disease prevention and treatment with an understanding of the behaviour and trend of T&CM use among the public in the communities, studies conducted in Malaysia reported that the nondisclosure rate was between 25.0% to 90.4%.⁴

Wdowik *et al.* recommended employing models and theories to study human behaviour and plan for more effective evaluations in research projects.¹⁰ The Health Belief Model (HBM) is a psychological health behaviour change model developed to understand health-related behaviour based on six major factors or constructs, i.e., perceived susceptibility to illness, perceived severity of illness, perceived benefit and barriers to action cues and self-efficacy. These factors may affect an individual's decision-making process on health-related behaviour.¹¹ The model has been applied to develop numerous health

communication interventions successfully to change health behaviours¹² and has also been replicated plenty of times to explain and predict various behaviours associated with health outcomes successfully.¹¹ Safe use of T&CM is one of the specifically highlighted interests to be explored in the Malaysian National Medicines Policy towards promoting better health outcomes.¹³ Previous studies have highlighted the prevalence and determinants of T&CM use in several conditions, including dengue fever and knee osteoarthritis.^{14,15} However, the factors that affect T&CM use related to health attitudes and beliefs have not been investigated in Malaysia. Therefore, this study aimed to investigate the usage of T&CM and the possible predictors of its use from socioeconomic, demographic, attitude, experience and beliefs perspectives among the general public in Malaysia.

Materials and Methods

Study design and recruitment

This study was conducted using a cross-sectional survey on a non-probability convenient sampling of respondents across Malaysia between November 2018 and May 2019. The general public was conveniently approached in shopping malls and hawker centers during the operating hours of the locations on weekends. Participants were self-administered a web-based (Google Forms) or a paper-based questionnaire based on their preferences. The respondents submitted the completed Google Forms survey online. For paper-based questionnaires, the respondents could either complete them on the spot or send them through the post when ready to the data collectors. The survey link of the Google Forms was also promoted through social media platforms, e.g., Facebook, WhatsApp, and Instagram, to reach out to the public to participate in the study. Written informed consent was obtained from the study respondents before the study. Study approval was obtained from the Human Research Ethics Committee of Universiti Sains Malaysia (USM/JEPeM/19010073).

Study instrument

A self-administered, validated questionnaire was adopted and used for data collection in this study. The questionnaire consisted of two main sections. The first section comprised demographic data, and the second section comprised attitudes toward T&CM use^{4,16}, as well as some general questions about the experience of T&CM use. Chang *et al.* first developed the assessment of attitude towards T&CM use based on the HBM.¹⁶ The section on attitude towards T&CM use consisted of 16 items on a five-point Likert scale instrument, from strongly disagree to strongly agree. These 16 items were further divided into two categories i.e. perceived benefits (items 1 to 5 and 11 to 16) and perceived barriers items (items 6 to 10). Responses were measured by summing up the Likert rating scale, with answers ranging from strongly disagree (one) to strongly agree (five). The maximum score of 55 and the minimum score of 11 were given for perceived benefits items, with the higher the score, the better the respondents' perceived benefit to the use of T&CM. The score for the perceived barriers items ranged from 5 to 25; the higher the score, the higher the perceived barriers to using T&CM. The questionnaire's English and Malay versions had been validated for use in Malaysia⁴, and therefore adopted for use in the current study. The Chinese version was adapted from Taiwan Chinese to Malaysia Chinese based on the international guideline¹⁷ and pilot tested in 10 local Chinese for language clarity.

Inclusion and exclusion criteria

The inclusion criteria for the study include Malaysian adults aged 18 years and above and able to read and comprehend either Malay, English or Chinese language. The exclusion criteria were non-Malaysia, those aged below 18 years and unable/ compromised to provide informed consent for the study.

Sample size estimation

The sample size was calculated according to a 95% confidence level and a 5.0% margin of error. The response distribution in this study was set at 50.0%. The calculated sample size was 377 based on Raosoft, an automated online sample size calculator (2004 by Raosoft, Inc.). With additional 20.0% data collected to account for possible data attrition, the required sample size was set as 453 per group. The total sample was 906 (group for those who had used T&CM and group for those who had never used T&CM before).

Data analysis

Data analysis was performed using the Statistical Package for Social Sciences (SPSS) version 27.0 (IBM, SPSS, Armonk, New York). The normality of the data was checked using the Kolmogorov-Smirnov test, and the data were found skewed ($p < 0.05$). Hence, continuous variables were expressed as the median and interquartile range (IQR), and categorical data were expressed as frequency and percentage. Comparisons were made between the T&CM users and non-T&CM users. Mann-Whitney U and Kruskal-Wallis tests were performed to measure the difference between the medians of two and more than two groups, respectively. Significant factors associated with T&CM use were identified from simple logistic regression (SLR) and included in the multiple logistic regression (MLR) analysis to identify the predictors of T&CM use. The SLR and MLR were presented as odds ratio (OR) and adjusted OR, respectively alongside the corresponding 95% confidence intervals (CI). $p < 0.05$ was considered statistically significant.

Results and Discussion

Five hundred and sixty-two (62.7%) respondents reported that they had experience in taking T&CM and thus were labelled as T&CM users, whereas 334 (37.3%) of the respondents (non-T&CM users) had never used T&CM before. The T&CM is increasingly becoming part of personal health practices; some users inform their doctors, and some as self-medication. Our study with data from all regions in Malaysia finds that more than half (62.7%) of the respondents were T&CM users. Other studies in Malaysia, the Republic of Korea, Singapore, Australia, Africa and China reported a similar range of T&CM usage, i.e. 62.0% to 90.0%; with studies conducted in Sweden, New Zealand and the US reported a lower percentage of T&CM users (30.0% to 34.0%).^{1,3,4,18-22} Prevalence of T&CM use differs by country, culture, and practice.

Sociodemographic characteristics

A total of 940 participants responded to this survey with a response rate of 98.7%. A total of 31 and 13 respondents were excluded from the study because they were non-Malaysians and had too much missing data, respectively. Thus, data from 896 respondents were analyzed in the current study as reported in Table 1. Respondents were aged between 18 to 92 years old, with a median age of 22.0 (IQR 19.0-40.8). Individuals between the ages of 41 and 50 were more likely to be T&CM users in the current study. The younger age groups used relatively less T&CM than those from the older age groups. This might be because the younger age groups were less affected by chronic diseases and did not perceive the positive effects of T&CM on improving the overall general wellbeing.

The majority of the respondents in this study were female, single, Malay, from the northern region of Malaysia and attained a bachelor's degree. Other studies reported an association with age, gender and education level.^{1,4,16} Spirituality in treatment and culture were also reported to influence T&CM use.²³ The current study showed that ethnicity influences T&CM use. The Chinese ethnic group has a long history of T&CM experience, and its use is integrated into the culture and custom practice of the ethnic group. Health practitioners could consider these predictor factors in planning the therapy management of their patient groups.

Attitudes toward T&CM use

Table 2 summarizes the responses of respondents' attitudes toward T&CM usage. The median (IQR) score of perceived benefits towards T&CM use for T&CM users was significantly higher than the non-T&CM users, i.e., 40.00 (36.00-43.00) versus 35.00 (31.00-39.00); $p < 0.01$. As many as 416 (74.0%) of the T&CM users agreed that using T&CM can improve some of their symptoms and 402 (71.5%) of them were interested in any kind of T&CM which helps with body self-healing. More than 50.0% of the T&CM users agreed or strongly agreed with all the perceived benefits items except "I consider that using T&CM can strengthen the effect of my modern medicine" 244 (43.4%), "I consider that using T&CM can easily control my illness" 252 (44.9%) and "the treatment of the alternative therapy is gentler, and safer" 273 (48.6%). On the other hand, non-T&CM users scored significantly higher on the perceived barriers scale compared to the T&CM users, i.e., median (IQR): 16.00 (15.00-18.00) versus 15.00 (12.00-17.00); $p < 0.01$. Most non-T&CM users felt uncertain about the

benefits of T&CM, even though almost half of them (49.4%) were interested in any kind of T&CM which helps body self-healing.

In this study, more than half of the respondents (55.6%) chose to consult a medical doctor, followed by purchasing medicines from retail pharmacies (22.4%) when they fell sick (Table 1).

Table 1: Distribution of sociodemographic characteristics of study respondents (n=896)

Variables	Frequency	Percentage (%)
Age; median (IQR): 22.0 (19.0-40.8)		
18-20 years	374	41.7
21-30 years	225	25.1
31-40 years	73	8.1
41-50 years	134	15.0
>51 years	90	10.0
Gender		
Male	252	28.1
Female	644	71.9
Marital Status		
Single	605	67.5
Married/living with partner	266	29.7
Widowed	22	2.5
Separated/divorced	3	0.3
Ethnicity		
Malay	467	52.1
Chinese	301	33.6
Indian	29	3.2
Others*	99	11.0
State		
Northern region	344	38.4
Central region	106	11.8
Southern region	134	15.0
East Coast region	44	4.9
East Malaysia (Labuan, Sabah, Sarawak)	268	29.9
Education Level		
No formal education	20	2.2
Secondary Education	115	12.8
College/Pre-university/Diploma	309	34.5
Bachelor's degree	422	47.1
Postgraduate	30	3.3
Monthly income		
< RM 1000	541	60.4
RM 1000-RM 3999	191	21.3
>RM 4000	164	18.3
Presence of chronic disease(s) or medical problem(s)		
Yes	135	15.1
No	761	84.9
First option to choose when sick		
Consult a medical doctor	498	55.6
Purchase medicines from retail pharmacy	201	22.4
T&CM	51	5.7
Self-medication	146	16.3

Keys: *Other ethnicities include Bidayuh, Bisaya, Bajau, Dusun, Iban, Kadazan, Kedayan, Kelabit and Melanau; IQR, interquartile range; RM, Ringgit Malaysia; T&CM: traditional and complementary medicine.

Table 2: Summary of attitudes toward T&CM use among the general public in Malaysia

No	Research Statement	T&CM User (n=562)					Non-T&CM User (n=334)				
		Strongly Disagree	Disagree	Uncertain	Agree	Strongly Agree	Strongly Disagree	Disagree	Uncertain	Agree	Strongly Agree
Perceived benefits score, median (IQR), p<0.01		40.0 (36.0-43.0)					35.0 (31.0-39.0)				
1	I consider that using T&CM can make my body feel better	7 (1.2)	24 (4.3)	154 (27.4)	319 (56.8)	58 (10.3)	14 (4.2)	36 (10.8)	154 (46.1)	118 (35.3)	12 (3.6)
2	I consider that using T&CM can improve some of my symptoms	13 (2.3)	16 (2.8)	117 (20.8)	358 (63.7)	58 (10.3)	14 (4.2)	34 (10.2)	137 (41.0)	131 (39.2)	18 (5.4)
3	I consider that using T&CM can strengthen the effect of my modern medicine	25 (4.4)	61 (10.9)	232 (41.3)	194 (34.5)	50 (8.9)	24 (7.2)	59 (17.7)	152 (45.5)	89 (26.6)	10 (3.0)
4	I consider that using T&CM can easily control my illness	23 (4.1)	60 (10.7)	227 (40.4)	214 (38.1)	38 (6.8)	27 (8.1)	58 (17.4)	174 (52.1)	66 (19.8)	9 (2.7)
5	I consider that using T&CM can prevent my illness complications	23 (4.1)	59 (10.5)	196 (34.9)	233 (41.5)	51 (9.1)	27 (8.1)	62 (18.6)	155 (46.4)	79 (23.7)	11 (3.3)
11	I am interested in any kind of T&CM which helps my body self-healing	21 (3.7)	48 (8.5)	91 (16.2)	300 (53.4)	102 (18.1)	18 (5.4)	59 (17.7)	92 (27.5)	135 (40.4)	30 (9.0)
12	Using both of methods (modern medicine and T&CM) is better than only using one alone	48 (8.5)	62 (11.0)	136 (24.2)	218 (38.8)	98 (17.4)	34 (10.2)	52 (15.6)	118 (35.3)	101 (30.2)	29 (8.7)
13	The use of T&CM can complement to the shortage of Modern Medicine in hospitals	24 (4.3)	36 (6.4)	146 (26.0)	260 (46.3)	96 (17.1)	16 (4.8)	57 (17.1)	116 (34.7)	125 (37.4)	20 (6.0)
14	The use of T&CM has more advantages than disadvantages	17 (3.0)	42 (7.5)	200 (35.6)	235 (41.8)	68 (12.1)	11 (3.3)	35 (10.5)	200 (59.9)	71 (21.3)	17 (5.1)
15	The treatment of the alternative therapy is more gentle, and safer	18 (3.2)	35 (6.2)	236 (42.0)	219 (39.0)	54 (9.6)	10 (3.0)	31 (9.3)	162 (48.5)	106 (31.7)	25 (7.5)
16	I will introduce some effective T&CM to other people	26 (4.6)	44 (7.8)	127 (22.6)	267 (47.5)	98 (17.4)	21 (6.3)	56 (16.8)	121 (36.2)	114 (34.1)	22 (6.6)
Perceived barriers score, median (IQR), p<0.01		15.0 (12.0-17.0)					16.00 (15.0-18.0)				

6	I consider that using T&CM may bring terrible interactions with my modern medicine	34 (6.0)	104 (18.5)	231 (41.4)	144 (25.6)	49 (8.7)	21 (6.3)	37 (11.1)	160 (47.9)	89 (26.6)	27 (8.1)
7	I consider that using T&CM may possibly harm my body	94 (16.7)	196 (34.9)	177 (31.5)	76 (13.5)	19 (3.4)	18 (5.4)	81 (24.3)	138 (41.3)	87 (26.0)	10 (3.0)
8	I consider that the doctor may be opposed to my use of T&CM	58 (10.3)	143 (25.4)	180 (32.0)	149 (26.5)	32 (5.7)	19 (5.7)	61 (18.3)	139 (41.6)	95 (28.4)	20 (6.0)
9	I consider that I do not have enough knowledge to select the right T&CM	30 (5.3)	96 (17.1)	118 (21.0)	225 (40.0)	93 (16.5)	12 (3.6)	28 (8.4)	72 (21.6)	139 (41.6)	83 (24.9)
10	I consider that using T&CM is expensive	53 (9.4)	184 (32.7)	174 (31.0)	120 (21.4)	31 (5.5)	22 (6.6)	95 (28.4)	130 (38.9)	70 (21.0)	17 (5.1)

Table 3: Predictors of T&CM use among the public in Malaysia

Independent variables	Frequency (%)		SLR		MLR	
	T&CM user (n= 562)	Non-T&CM user (n=334)	β	Crude OR (95% CI)	β	Adjusted OR (95% CI)
Age Group						
18-20 years	210 (37.4)	164 (49.1)		REF		
21-30 years	135 (24.0)	90 (26.9)	0.16	1.17 (0.84,1.64)		
31-40 years	50 (8.9)	23 (6.9)	0.53	1.70 (0.99,2.90)		
41-50 years	104 (18.5)	30 (9.0)	0.99	2.71 (1.72,4.27)*	1.20	3.33 (1.47,7.53)*
>51 years	63 (11.2)	27 (8.1)	0.60	1.82 (1.11,2.99)*		
Gender						
Male	176 (31.3)	76 (22.8)		REF		
Female	386 (68.7)	258 (77.2)	-0.44	0.65 (0.47,0.88)*		
Marital Status						
Single	352 (62.6)	253 (75.7)		REF		
Married/living with partner	192 (34.2)	74 (22.2)	0.62	1.86 (1.36,2.55)*		
Widowed	17 (3.0)	5 (1.5)	0.89	2.44 (0.89,6.71)		
Separated/divorce	1 (0.2)	2 (0.6)	-1.02	0.36 (0.03,3.99)		
Ethnicity						
Malay	258 (45.9)	209 (62.6)		REF		

Chinese	219 (39.0)	82 (24.6)	0.77	2.16 (1.58,2.96)*	1.08	2.95 (1.97,4.42)*
Indian	15 (2.7)	14 (4.2)	-0.14	0.87 (0.41,1.84)		
Others	70 (12.5)	29 (8.7)	0.67	1.96 (1.22,3.13)*	0.81	2.25 (1.16,4.38)*
State						
Northern region	203 (36.1)	141 (42.2)		REF		
Central region	64 (11.4)	42 (12.6)	0.06	1.06 (0.68,1.65)		
Southern region	89 (15.8)	45 (13.5)	0.32	1.37 (0.90,2.09)		
East Coast region	24 (4.3)	20 (6.0)	-0.18	0.83 (0.44,1.57)		
East Malaysia (Labuan, Sabah, Sarawak)	182 (32.4)	86 (25.7)	0.39	1.47 (1.05,2.05)*		
Education Level						
Primary Education	17 (3.0)	3 (0.9)		REF		
Secondary Education	78 (13.9)	37 (11.1)	-0.99	0.37 (0.10,1.35)		
College/Pre-university/Diploma	199 (35.4)	110 (32.9)	-1.14	0.32 (0.09,1.11)		
Bachelor degree	245 (43.6)	177 (53.0)	-1.41	0.24 (0.07,0.85)*		
Postgraduate	23 (4.1)	7 (2.1)	-0.55	0.58 (0.13,2.58)		
Monthly income						
< RM 1000	325 (57.8)	216 (64.7)		REF		
RM 1000-RM 3999	125 (22.2)	66 (19.8)	0.23	1.26 (0.89,1.78)		
>RM 4000	112 (19.9)	52 (15.6)	0.14	1.43 (0.99,2.07)		
Presence of chronic disease(s) or medical problem(s)						
Yes	95 (16.9)	40 (12.0)	0.40	1.50 (1.00,2.22)*		
No	467 (83.1)	294 (88.0)		REF		
First option to choose when sick						
Consult a medical doctor	293 (52.1)	205 (61.4)	-0.21	0.82 (0.56,1.19)		
Purchase from- retail pharmacy	131 (23.3)	70 (21.0)	0.06	1.07 (0.68,1.66)		
T&CM	45 (8.0)	6 (1.8)	1.45	4.27 (1.71,10.68)*	1.16	3.19 (1.26,8.02)*
Self-medication	93 (16.5)	53 (15.9)		REF		
Perceived benefit (Mean (±SD))	39.0 (6.9)	34.7 (7.3)	0.09	1.09 (1.07,1.11)*	0.09	1.10 (1.07,1.12)*
Perceived barrier (Mean (±SD))	14.8 (3.9)	15.9 (3.3)	-0.09	0.91 (0.88,0.95)*	-0.13	0.88 (0.84,0.92)*

Keys: SLR, Simple Logistic Regression; MLR, Multiple Logistic Regression; OR: odds ratio; REF, reference group; CI, confidence interval; *: $p < 0.05$ statistically significant.

It is important to note that the disapproval of their doctors was cited as a barrier to TCM use by both TCM users (32.2%) and non-users (34.4%). The concern about the disapproval from their doctors may affect the choice of T&CM use. The results were consistent with those of some previous research where respondents' perceptions that doctors could oppose the use of T&CM had discouraged them from being used.^{4, 8, 24} Furthermore, in contrast to the findings of Choi *et al.*, the cost of T&CM was not a concern among the study's non-T&CM users.²⁴

It is reassuring to know that most TCM and non-TCM users in this study have confidence in modern medicine and chose to consult medical doctors when they first encountered a disease condition, while less than 10% chose T&CM. The increasing level of education in the demographics of T&CM users over the decades could have changed the landscape of safe T&CM usage. In previous studies, people who chose T&CM over modern medicine were those who perceived control over their health and perceived higher spirituality values.²⁵ Our results also indicated that about one-fifth of the T&CM users and non-users visited a retail pharmacy to purchase medications when they first encountered sickness. This may be due to easy access to pharmacists in the community with free consultation services. It is also believed that community pharmacists could contribute to the proper use of T&CM by providing advice for safe use.⁷

The T&CM users had more chronic diseases or other medical conditions than non-T&CM users.²⁴ Similar findings were observed in the current study, even though the presence of chronic disease(s) or medical problem(s) was significantly associated with T&CM users only in the simple regression analysis. Another study from Singapore also reported increased T&CM use in chronic conditions such as chronic pain among older users.²⁰ This could be aligned to their perception that T&CM complements modern medicine in improving disease symptoms. In other studies, chronic disease patients were reported to use T&CM concurrently with modern medicines, which concerns the interaction with conventional treatment and the safety of T&CM use.²⁴ This becomes important for healthcare professionals to identify T&CM use among their patients. The roles of healthcare professionals, such as pharmacists, are important to ensure proper education and advice on safe T&CM use, as suggested by a study among customers of community pharmacies.⁸

Relationship between sociodemographic characteristics and T&CM use

The relationship between sociodemographic characteristics and T&CM use is shown in Table 3. The bivariate analyses comparing the T&CM with non-T&CM users found that those who were aged 41 years and above, Chinese and the indigenous ethnic groups of East Malaysia, namely Bidayuh, Bisaya, Bajau, Dusun, Iban, Kadazan, Kedayan, Kelabit, Melanau, married status, East Malaysian and those present with chronic disease(s) or medical problem(s) were

significantly associated with T&CM use. After controlling all factors in the multiple logistic analysis, respondents aged between 41-50 years old (OR: 3.33, 95% CI 1.47, 7.53) had a 3.33 chance (odds) compared to the other age groups to be a T&CM user. The same applied to Chinese and other ethnicities where they had a 2.95 and 2.25 chance (odds), respectively of being a T&CM user. T&CM users also had higher chances by 1.10 odds of scoring high in the perceived benefits domain. In contradiction, T&CM users were less likely to score in the perceived barrier domain.

Perceived benefits, perceived barriers and sociodemographic factors

The HBM has been used to predict the likelihood of taking health actions based on perceptions of respondents in several constructs.¹¹ The relations of the constructs to disease prevention and treatment were reviewed by Carpenter 2010, and the meta-analysis found that the construct of perceived benefits and barriers were the strongest predictors to predict behavior.²⁶ The current study focused on the construct of perceived benefits and barriers to predicting the usage of T&CM.

Table 4 shows the median attitude score towards T&CM use by sociodemographic factors. There was a statistically significant difference in perceived benefits scores between different age groups and education levels among T&CM users. Using Bonferonni correction, for T&CM users, age groups between ≤ 20 years and > 51 years and 21-30 years and >51 years indicate significant mean difference ($p=0.007$ and 0.032 , respectively). Meanwhile, for non-T&CM users, the age group between ≤ 20 years and 41-50 years recorded a significant mean difference ($p=0.017$). T&CM users who were aged more than 51 years old and those with an education level below primary school scored the highest on the perceived benefits scale scores with a median (interquartile range) of 42.0 (38.0-46.0) and 46.0 (41.0-48.5), respectively. Meanwhile, for non-T&CM users, results indicated statistically significant differences between the age groups, marital status and monthly income. However, further investigation using the Bonferonni correction method has shown no significant mean difference for each item studied. On the other hand, T&CM users scored significantly lower in the perceived barrier scale among widowed, Malay and other ethnicities, while no significant differences were observed in the perceived barrier scores among all the social demographic data in non-T&CM users. Our study reported that T&CM users have a higher perception of the benefits and a lower perception of the barriers to T&CM. The perceived benefits included positive effects on the body, reduced disease complications, improved disease symptoms and fewer side effects than modern medicine. Similar trends were reported in other studies^{27, 28}, while personal choice and family belief were reported as the two main influences on respondents' preferred types of T&CM in another study.²⁹ Future research could explore the influence of culture, religion and traditions on T&CM usage in samples of a multicultural society.

Table 4: Median (IQR) scores of attitudes toward T&CM use by sociodemographic factors

	Perceived Benefits, Median (IQR)		Perceived Barriers, Median (IQR)	
	T&CM (n=562)	Non-T&CM (n=334)	T&CM (n=562)	Non-T&CM (n=334)
Age^a				
18-20 years	40.0 (35.0-43.0)*	36.0 (33.0-40.0)*	15.0 (12.0-17.0)	15.0 (14.0-18.0)
21-30 years	39.0 (34.0-43.0)*	35.0 (31.0-39.0)*	15.0 (13.0-18.0)	16.0 (15.0-18.0)
31-40 years	39.0 (34.0-43.0)*	36.0 (33.0-38.0)*	15.0 (12.8-17.0)	17.0 (15.0-19.0)
41-50 years	40.0 (37.0-42.0)*	33.0 (27.5-36.0)*	15.0 (12.3-16.8)	16.0 (15.0-19.0)
>51 years	42.0 (38.0-46.0)*	32.0 (28.0-37.0)*	14.0 (12.0-16.0)	17.0 (16.0-18.0)
Gender^b				
Male	41.0 (36.0-44.0)	36.0 (30.3-39.0)	15.0 (12.3-17.0)	17.0 (14.0-18.0)
Female	39.0 (35.0-43.0)	35.0 (31.8-39.0)	15.0 (12.0-17.0)	16.0 (15.0-18.0)
Marital Status^a				
Single	40.0 (35.0-43.0)	36.0 (33.0-40.0)*	15.0 (13.0-18.0)*	16.0 (14.0-18.0)

Married/living with partner	39.0 (37.0-43.0)	33.0 (28.0-38.0)*	15.0 (12.3-17.0)*	17.0 (15.0-18.0)
Widowed	41.0 (39.5-49.0)	33.0 (26.5-42.5)*	13.0 (11.5-15.5)*	16.0 (13.5-16.5)
Separated/divorce	34.0 (34.0-34.0)	36.5 (36.0-36.5)*	17.0 (17.0-17.0)*	17.0 (16.0-17.0)
Ethnicity^a				
Malay	40.0 (37.0-43.0)	35.0 (31.0-39.0)	14.0 (12.0-16.0)*	16.0 (14.0-18.0)
Chinese	40.0 (35.0-44.0)	36.0 (31.0-40.0)	16.0 (14.0-18.0)*	17.0 (15.0-19.0)
Indian	38.0 (34.0-42.0)	33.5 (28.8-38.8)	15.0 (9.0-19.0)*	17.0 (15.0-20.0)
Others	39.0 (35.0-43.3)	33.0 (32.5-38.5)	14.0 (11.0-17.0)*	16.0 (14.0-17.5)
State^a				
Northern region	39.0 (36.0-43.0)	36.0 (33.0-40.0)	15.0 (13.0-17.0)	16.0 (15.0-18.0)
Central region	40.0 (34.3-43.0)	35.5 (32.8-39.3)	15.0 (12.0-17.0)	15.5 (14.0-18.0)
Southern region	40.0 (36.0-43.0)	34.0 (30.0-38.0)	15.0 (12.0-17.0)	16.0 (15.0-17.5)
East Coast region	40.5 (35.0-45.0)	36.0 (28.3-38.8)	15.0 (12.0-17.0)	15.0 (13.3-17.8)
East Peninsular Malaysia [#]	40.0 (35.8-44.0)	34.0 (31.0-39.0)	15.0 (12.8-18.0)	16.0 (15.0-18.0)
Education Level^a				
Primary Education	46.0 (41.0-48.5)*	33.0 (28.0-33.0)	14.0 (11.5-17.0)	15.0 (14.0-15.0)
Secondary Education	39.0 (37.0-42.0)*	36.0 (30.0-40.0)	15.0 (12.8-16.3)	17.0 (15.0-18.0)
College/Pre-university/Diploma	40.0 (35.0-43.0)*	36.5 (31.0-41.0)	15.0 (12.0-17.0)	16.0 (15.0-18.0)
Bachelor's degree	39.0 (35.0-43.0)*	35.0 (31.5-38.5)	15.0 (12.0-17.0)	16.0 (14.0-18.0)
Postgraduate	41.0 (34.0-44.0)*	32.0 (27.0-36.0)	15.0 (13.0-17.0)	16.0 (13.0-17.0)
Monthly income^a				
< RM1000	40.0 (35.0-43.0)	36.0 (33.0-40.0)	15.0 (13.0-17.5)	16.0 (14.0-18.0)
RM1000-RM 3999	40.0 (37.0-42.5)	34.5 (28.0-38.0)	15.0 (12.0-17.0)	16.0 (15.0-18.0)
>RM 4000	40.0 (35.0-43.0)	33.0 (30.3-36.0)	15.0 (13.0-17.0)	17.0 (15.0-19.0)

Keys: ^aKruskal Wallis Test; ^bMann-Whitney Test; [#] Included Labuan, Sabah and Sarawak; *: $p < 0.05$ statistically significant

In the current study, non-T&CM users perceived higher barriers to T&CM use. These barriers included concerns about the side effects of T&CM and the negative effects that it may bring when used with conventional treatment. Their lack of confidence in the knowledge of T&CM use was associated with their option of not using T&CM. Johnny *et al.* suggested that the confidence level of knowledge in selecting the right T&CM could predict T&CM use.⁴ The study has a few limitations. First, the non-probability convenient sampling method used in the study may lead to the under- or over-representation of particular groups within the sample. The limitation of the current study was that about 50.0% of the respondents were aged 18-22 years old. This could be because the age group was more active in social media and participated in the study through the survey link promoted through social media. Therefore, the generalisability of the results to the whole community should be taken with caution. Secondly, the study used a questionnaire as the instrument, unavoidably limited by response bias where participants might respond inaccurately or dishonestly to the questions. Despite these limitations, this is the first study that attempted to recruit respondents from all regions in Malaysia.

Conclusion

This study revealed that the predictors of T&CM use include older age, Chinese and other ethnicities, and participants with perceived benefits of T&CM therapies. Awareness counselling on the safety of T&CM use could focus on the above-mentioned specific groups. The results of this study will help healthcare professionals to provide appropriate guidance regarding the rational use of T&CM. In addition, the study findings provided information and evidence that could be

useful for future educational programme and relevant policy development.

Funding

The research received the Bridging-Incentive Grant from Research Creativity and Management Office, Universiti Sains Malaysia, Pulau Pinang, Malaysia.

Conflict of Interest

The authors declare no conflict of interest.

Authors' Declaration

The authors hereby declare that the work presented in this article is original and that any liability for claims relating to the content of this article will be borne by them.

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