

## ORIGINAL ARTICLE

# Assessment of Knowledge, Attitudes, and Practices Toward Traditional and Complementary Medicines among the General Public in Malaysia

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## ABSTRACT

**Introduction:** Traditional and complementary medicines (TCM) are widely used for disease management in Malaysia. This study aimed to assess the knowledge, attitudes, and practices (KAPs) toward TCM among the general public users in Malaysia. **Methods:** The study was a cross-sectional study using a self-administered questionnaire to evaluate the KAPs regarding TCM among the general public users in Malaysia. The study involved adult participants aged 18 years and above recruited across all the regions in Malaysia using convenience sampling from November 2018 to May 2019. Data were analyzed using descriptive statistics. **Results:** A total of 562 responses were included in the study. The participants were predominantly females (68.7%), aged 30 years and below (61.4%), and of Malay ethnic background (45.9%). Most participants reported using TCM to alleviate specific symptoms (74.0%) and promote body healing (71.5%). However, 56.5% of participants acknowledged inadequate knowledge of TCM. Furthermore, almost half of the participants (49.5%) do not disclose their TCM usage to medical doctors. The primary motivations for TCM use were its perceived naturalness (73.3%) and the belief in its lower incidence of adverse effects (40.2%). Additionally, 60.5% of participants were unaware of the necessity for TCM products to be registered with the relevant health authority in Malaysia. **Conclusion:** This study indicates that most TCM users in Malaysia do not have adequate knowledge of TCM products. However, the majority reported positive attitudes and practices toward the TCM. These findings provide valuable insights for designing interventions to improve the rational and safe use of TCM.

**Keywords:** Knowledge; Attitude; Practice; Traditional and Complementary Medicine; Malaysia

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## INTRODUCTION

Traditional and complementary medicine (TCM) encompasses various therapeutic modalities that involve non-pharmaceutical interventions and natural remedies [1]. The Malaysian National Medicines Policy highlights the importance of using TCM safely and appropriately to improve health outcomes [2]. The utilization of TCM has been on the rise globally, including in Malaysia, for health maintenance, disease prevention and treatment. As TCM becomes increasingly popular, ensuring its rational use becomes

crucial. Malaysia has regulations in place for the registration of TCM practitioners. Recently, the out-of-pocket health expenditure on TCM in Malaysia has substantially increased. It more than doubled from RM264 million in 1997 to RM541 million in 2017 [3]. In Malaysia, the registration of TCM practitioners in Malaysia is regulated by the Traditional and Complementary Medicine Act 2016 [4].

Malaysia, with its diverse and multiethnic society, exhibits varying TCM utilization. Previous studies have shown that many Malaysian populations have used TCM, particularly for managing chronic conditions such as diabetes, hypertension and asthma [5, 6]. A survey conducted in Malaysia revealed that most of the ethnically diverse participants (97.3%) had utilized at least one form of TCM in their lifetime [6]. Another

study reported that most TCM users in Malaysia rely on TCM to manage non-communicable medical conditions [7-10]. Furthermore, another study reported a TCM utilization rate of 63.9%, with a substantial proportion (57.9%) of patients using TCM specifically to treat knee osteoarthritis [11]. However, no study assessed the knowledge and perception of TCM among public users in Malaysia. Therefore, this study aimed to examine the knowledge, attitude, and practices toward TCM among the general public users in Malaysia.

## MATERIALS AND METHODS

### Study Design

This cross-sectional study utilized a self-administered questionnaire to assess the knowledge, attitudes, and practices related to traditional and complementary medicine among the users in the general public in Malaysia. The study was conducted from November 2018 to May 2019. The study allowed the participants to choose between an online web-based (Google Forms) or a paper-based (face-to-face) questionnaire. An extensive outreach strategy across all the regions in Malaysia was implemented to maximize survey participation, leveraging popular social media platforms such as email, WhatsApp, Facebook, and Instagram to disseminate the survey link and engage a diverse audience.

### Study population and setting

The study included Malaysian adults aged 18 years and above of all genders who were TCM users and could read and understand English, Malay, or Chinese. Participants without prior experience using TCM were excluded from the study. The study excluded participants using a screening question (i.e., Have you ever taken TCM?). Those non-TCM users were screened out from the current study and skipped from answering all the subsequent questions.

### Sample size and sampling technique

The sample size was determined using the Raosoft sample size calculator (© 2004 by Raosoft, Inc., <http://www.raosoft.com/samplesize.html>) at a 95% confidence level, 80% power, and a 5% margin of error [12]. The sample size doesn't change much for populations larger than 20,000. The minimum sample size required was calculated as 385, and after accounting for a 30% attrition rate, the final minimum sample size was set at 500 participants. Convenience sampling was used to recruit participants from various regions in Malaysia, with data collectors approaching potential participants in public areas such as shopping malls, eateries, and bus stations. The 30% attrition rate was due to the nature of convenience sampling, where participants are recruited from various public settings without pre-commitment. Given the geographical diversity of participants from different regions of Malaysia and potential logistical challenges in follow-ups, a higher attrition rate is

expected. We intended to ensure robust statistical power. The risk of bias with the convenience sampling method was mitigated by ensuring a diverse sample across various demographic groups and validating the responses through cross-referencing with other data sources.

### Questionnaire validation

The structured questionnaire was in English, adapted from previous questionnaires through a comprehensive literature review [6, 13, 14]. The questionnaire underwent content validity by an experts panel (n=10) consisting of academic pharmacists proficient in English, Malay, and Chinese and face validity by a sample of the target users of TCM (n=20), as described previously [15-18]. Forward and back-translation into the English version was used to ensure accuracy and achieve conceptual equivalence when translating the survey instrument into Malay and Chinese. The experts panel ensured that the Malay and Chinese versions were equivalent to the original English version in terms of their content, wording, and cognitive level. Their suggestions were extensively discussed until obtaining the final version before the pilot test. Their suggestions were incorporated, and the questionnaire was pilot-tested with 30 participants to measure the clarity and feasibility of data collection. Minor modifications were made based on the content validity, face validity and pilot test feedback, including the addition of definitions and types of TCM. The pilot test data was not included in the subsequent main study.

Finally, the face and content validity of the questionnaire was deemed satisfactory to the experts panel. All the participants in the pilot test completed the questionnaire unassisted without any problem. To ensure the reliability of the questionnaire, internal consistency was calculated with Cronbach's alpha coefficient. The questionnaire has satisfactory internal consistency and reliably measures the same concept, with Cronbach's alpha coefficients reported at 0.65 and 0.83 for the knowledge and attitude domains, respectively.

### Questionnaire tool

The questionnaire included sections on demographic data, health profiles, healthcare utilization, TCM knowledge, attitudes toward TCM (perceived benefits and barriers) [6, 13], TCM usage practices, and reasons for using TCM. A total of 950 questionnaires were distributed in three languages (English 600, Malay 300 and Chinese 300). The responses received consist of English (342/600), Malay (120/300) and Chinese (100/250).

The TCM knowledge questions had three responses: 'Yes', 'No' or 'Don't know'. The correct answer was coded "1", and the incorrect and don't know the answer was given zero. The responses for attitude were measured by summing the 5-Likert rating scale, with

answers ranging from strongly disagree (1) to strongly agree (5). The perceived benefits scores could range from 11 to 55, with higher scores indicating better perceived benefits towards TCM use. However, the perceived barriers scores could range from 5 to 25, with higher scores signifying higher perceived barriers toward TCM use [6, 13]. The practice of using TCM had two responses of 'Yes' and 'No' and options of reason(s) for those taking modern medicine together with TCM simultaneously. The reasons for using TCM responses had the possible reason(s) for using TCM, the function of TCM use(s), the person who recommended the use of TCM and the source(s) of TCM information.

**Data analysis**

The data were coded and analyzed using SPSS version 24 (IBM, SPSS, Armonk, New York, United States). Descriptive statistics were used to summarize sociodemographic characteristics, knowledge, attitude, practice and barriers towards TCM. Categorical data were presented as frequencies and percentages, while continuous variables were presented as mean (standard deviation) and median (interquartile range).

**Ethical consideration**

The study was approved by the Institutional Human Research Ethics Committee, JEPeM, Universiti Sains Malaysia (USM/JEPeM/19010073). Written informed consent was sorted from all the study participants. The study ensured that the anonymity, privacy and confidentiality of the study participants' data were protected throughout the study

**RESULTS**

**Sociodemographic characteristics**

A total of 562 TCM users were included in the study. Most participants were aged 30 years and below 345 (61.4%), females 386 (68.7%), and had no underlying chronic diseases 467 (83.1%). Most participants reported that both modern medicine and TCM were accessible within their communities 348 (61.9%). In the event sickness, 293 (52.1%) of the participants would opt to consult a medical doctor first, whereas

**Table 1 : Sociodemographic characteristics and health profile of the study participants**

Variables	Frequency (%)
<b>Age Group</b>	
18-20 years	210 (37.4)
21-30 years	135 (24.0)
31-40 years	50 (8.9)
41-50 years	104 (18.5)
>51 years	63 (11.2)

<b>Gender</b>	
Male	176 (31.3)
Female	386 (68.7)
<b>Marital Status</b>	
Single	352 (62.6)
Married/living with partner	192 (34.2)
Widowed	17 (3.0)
Separated/divorced	1 (0.2)
<b>Ethnicity</b>	
Malay	258 (45.9)
Chinese	219 (39.0)
Indian	15 (2.7)
Others	70 (12.5)
<b>State Region</b>	
Northern region	203 (36.1)
Central region	64 (11.4)
Southern region	89 (15.8)
East Coast region	24 (4.3)
East Malaysia	281 (32.4)
<b>Education Level</b>	
Primary Education and below	17 (3.0)
Secondary Education	78 (13.9)
College/Pre-university/Diploma	199 (35.4)
Bachelor's degree	245 (43.6)
Postgraduate	23 (4.1)
<b>Monthly income</b>	
< RM 1000	325 (57.8)
RM 1000-RM 3999	125 (22.2)
RM 4000-RM 6999	73 (13.0)
RM 7000-RM 9999	21 (3.7)
>RM 10000	18 (3.2)
<b>Type of medicines more accessible in the community</b>	
Modern medicine	187 (33.3)
TCM	24 (4.3)
Both	348 (61.9)
<b>First option to choose when sick</b>	
Consult a medical doctor	293 (52.1)
Purchase from retail pharmacy	131 (23.3)
TCM	45 (8.0)
Self-medication	93 (16.5)
<b>Presence of medical condition(s)</b>	95 (16.9)

Keys: n=562; TCM: Traditional and Complementary Medicine

131 (23.3%) would purchase medications directly from a retail pharmacy. The rest of the demographic data were tabulated in Table I.

**Knowledge of Traditional and Complementary Medicine**

Many of the participants did not know 195 (34.8%) or were unsure 144 (25.7%) that TCM must be registered with the National Pharmaceutical Regulatory Agency (NPRA), Ministry of Health (MOH) Malaysia. Only 152 (27.1%) participants knew the TCM they had taken was registered with the NPRA. When deciding on the dosage of TCM consumed, most would follow the instruction from TCM’s practitioners 399 (71.0%) or instructions on the packaging 366 (65.1%). Only 160 (28.5%) of the participants were aware of the common side effects of TCM. Among the participants, 389 (69.2%) were unaware of possible side effects when taking TCM and modern medicine together. The summary of responses on the knowledge of TCM is summarized in Table II.

**Attitude towards Traditional and Complementary Medicine**

Table III presents the participants’ attitudes toward TCM. In the perceived benefits section, the participants answered a total of 16 questions with a median score (interquartile range, IQR) of 40.00 (36.00-43.00) and

a mean score (standard deviation, SD) of 39.02 (6.91). Most of the participants 416 (74.0%), believed that using TCM can improve some symptoms, 402 (71.5%) were interested in any TCM which helps body self-healing, and 365 (64.9%) believed that using TCM can make their body feel better and would introduce some effective TCM to other people. On the other hand, participants answered five questions on perceived barriers toward TCM use with a median score (IQR) of 15.00 (12.00-17.00). More than half of the participants 319 (56.5%) agreed they don’t have enough knowledge to select the right TCM.

**Practice towards Traditional and Complementary Medicine**

Nearly half of the participants 278 (49.5%) did not inform their medical doctor about their usage of TCM. About 220 (40.0%) of the participants had taken modern medicine with TCM simultaneously, with 109 (49.5%) reported doing so with self-medication. The summary of responses on practice towards TCM use is presented in Table IV.

**Reasons for Using Traditional and Complementary Medicine**

The main reasons that the participants chose to use TCM

**Table II : Knowledge about traditional and complementary medicine**

Knowledge	Frequency (%)
<b>Aware that TCM must be registered with National Pharmaceutical Regulatory Agency (NPRA)</b>	
Yes	222 (39.6)
No	195 (34.8)
Not sure	144 (25.7)
<b>Aware that the TCM taken have been registered with NPRA</b>	
Yes	152 (27.1)
No	59 (10.5)
Not sure	350 (62.4)
<b>Decide on the dosage of TCM consumed (Respondents may choose more than one answer)</b>	
Follow the instruction on the packaging	366 (65.1)
Follow the instruction of TCM’s practitioners	399 (71.0)
Decide myself	66 (11.7)
<b>Aware of the common side effect(s) of the TCM taken?</b>	
Yes	160 (28.5)
No	144 (25.7)
Not sure	257 (45.8)
<b>Aware of any possible side effects when taking TCM and modern medicine at the same time?</b>	
Yes	173 (30.8)
No	109 (19.4)
Not sure	280 (49.8)

Keys: n=562; TCM: Traditional and Complimentary Medicine

**Table III : Attitude towards traditional and complementary medicine**

Attitudes	Summary of responses, n (%)					Mean(SD)	Median (IQR)	
	Strongly Disagree	Disagree	Uncertain	Agree	Strongly Agree			
Item	Perceived benefits, total score					39.02 (6.91)	40.00 (36.00-43.00)	
1	I consider that using TCM can make my body feel better	7 (1.2)	24 (4.3)	154 (27.4)	319 (56.8)	58 (10.3)	3.71 (0.758)	4.00 (3.00-4.00)
2	I consider that using TCM can improve some of my symptoms	13 (2.3)	16 (2.8)	117 (20.8)	358 (63.7)	58 (10.3)	3.77 (0.762)	4.00 (3.00-4.00)
3	I consider that using TCM can strengthen the effect of my modern medicine	25 (4.4)	61 (10.9)	232 (41.3)	194 (34.5)	50 (8.9)	3.33 (0.940)	3.00 (3.00-4.00)
4	I consider that using TCM can easily control my illness	23 (4.1)	60 (10.7)	227(40.4)	214 (38.1)	38 (6.8)	3.33 (0.903)	3.00 (3.00-4.00)
5	I consider that using TCM can prevent my illness complications	23 (4.1)	59 (10.5)	196 (34.9)	223 (41.5)	51 (9.1)	3.41 (0.938)	4.00 (3.00-4.00)
11	I am interested in any kind of TCM which helps my body self-healing	21 (3.7)	48 (8.5)	91 (16.2)	300 (53.4)	102 (18.1)	3.74 (0.977)	4.00 (3.00-4.00)
12	Using both methods (Modern medicine and TCM) is better than only using one alone	48 (8.5)	62 (11.0)	136 (24.2)	218 (38.8)	98 (17.4)	3.46 (1.154)	4.00 (3.00-4.00)
13	The use of TCM 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)	3.65 (0.977)	4.00 (3.00-4.00)
14	The use of TCM has more advantages than disadvantages	17 (3.0)	42 (7.5)	200 (35.6)	235 (41.8)	68 (12.1)	3.52 (0.908)	4.00 (3.00-4.00)
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)	3.46 (0.871)	3.00 (3.00-4.00)
16	I will introduce some effective TCM to other people	26 (4.6)	44 (7.8)	127 (22.6)	267 (47.5)	98 (17.4)	3.65 (1.006)	4.00 (3.00-4.00)
	Perceived barriers, total score					14.82 (3.59)	15.00 (12.00-17.00)	
6	I consider that using TCM may bring terrible interactions with my Modern medicine	34 (6.0)	104 (18.5)	231 (41.1)	144 (25.6)	49 (8.7)	3.12 (1.009)	3.00 (3.00-4.00)
7	I consider that using TCM may possibly harm my body	94 (16.7)	196 (34.9)	177 (31.5)	76 (13.5)	19 (3.4)	2.52 (1.029)	2.00 (2.00-3.00)
8	I consider that the doctor may be opposed to my use of TCM	58 (10.3)	143 (25.4)	180 (32.0)	149 (26.5)	32 (5.7)	2.92 (1.075)	3.00 (2.00-4.00)
9	I consider that I do not have enough knowledge to select the right TCM	30 (5.3)	96 (17.1)	118 (21.0)	225 (40.0)	94 (16.5)	3.45 (1.115)	4.00 (3.00-4.00)
10	I consider that using TCM is expensive	53 (9.4)	184 (32.7)	174 (31.0)	120 (21.4)	31 (5.5)	2.81 (1.051)	3.00 (2.00-4.00)

Keys: n=562; TCM: Traditional and Complementary Medicine

**Table IV : Practice towards traditional and complementary medicine**

Practice	Frequency (%)
Informed medical doctor about the use of TCM	284 (50.5)
Only receive TCM under the advice or help from registered or certified TCM practitioners	314 (55.9)
Have you ever taken modern medicine together with TCM at the same time?	
Yes (respondents may select more than ONE reason)	220 (39.1)
Advised by medical doctor/modern medicine practitioner	55 (25)
Advised by TCM practitioner	49 (22.3)
Advised by pharmacist	28 (12.7)
Advised by family/relatives/ friends	46 (20.9)
Self-medication	109 (49.5)
No	342 (60.9)

Keys: n=562; TCM: Traditional and Complementary Medicine

**Table V : Reasons for using traditional and complementary medicine**

Purpose and reason for choosing TCM	Frequency (%)
<b>Reason(s) for choosing TCM</b>	
Cheaper	137 (24.4)
Easily available	195 (34.7)
More effective	155 (27.6)
More natural	412 (73.3)
Less side effect	226 (40.2)
Have stood the test of time	163 (29.0)
Others	17 (3.0)
<b>Purpose of using TCM</b>	
Beauty purpose	89 (15.8)
Increasing longevity	69 (12.3)
General wellbeing	378 (67.3)
Treating illness	383 (68.1)
Preventive measure	250 (44.5)
Others	12 (2.1)
<b>Person who recommended the use of TCM</b>	
Medical doctor/ Modern medicine practitioner	50 (8.9)
TCM physicians/practitioner	156 (27.8)
Pharmacist	47 (8.4)
Family/relatives/ friends	480 (85.4)
Self-medication	188 (33.5)
Others	1 (0.2)
<b>Obtained information about the effect of TCM from:-</b>	
Family/relatives/friends	497 (88.4)
Internet	288 (51.2)
Books/magazine	184 (32.7)
Workshop/courses	29 (5.2)

Keys: n=561; TCM: Traditional and Complementary Medicine

include their understanding that TCM is more natural 412 (73.3%), has fewer side effects 226 (40.2%) and is readily available 195 (34.7%). A large proportion of the participants used TCM to treat illness 383 (68.1%), for general well-being 378 (67.3%) and as a preventive measure 250 (44.5%). As high as 85.4% of the participants used TCM as their family members, relatives, or friends recommended it. Family members, relatives or friends 497 (88.4%) have also become their main source of information about TCM's effect, followed by the internet 288 (51.2%). The responses on the reasons for using TCM is summarized in Table V.

## DISCUSSION

This current study suggests that most of the traditional and complementary medicine users in Malaysia lack adequate knowledge about TCM products. However, most of them reported positive attitudes and practices toward the TCM. Such insights are crucial for designing interventions to enhance the safe, effective and rational use of TCM among the public.

This study reported that about 60% of the participants did not know or were unsure that TCM must be registered with the health authority in Malaysia. Only about a quarter of them knew the TCM they had taken was registered with the MOH. It's a known fact that almost all adulterated TCM products are not registered with the MOH. Considering this, consuming only the registered TCM products is critical to ensure the quality and safety of TCM use is being inspected, especially screened for heavy metals and contaminants. The findings were consistent with another recent local study where only half of participants (54.7%) knew the necessity of proper labelling and registration of all medications, health supplements and traditional medications under the Ministry of Health [19]. This is a cause of great concern as some manufacturers and sellers adulterated TCM to give an immediate effect to consumers for lucrative profits, leading to various side effects and jeopardising consumers' health. In addition, long-term exposure to heavy metals like mercury, lead, arsenic and cadmium can cause damage to the lungs, brain and kidneys and cause miscarriage or congenital disabilities in pregnant women [20].

The attitude of perceived benefit towards TCM use was positive, with most participants considering that using TCM can improve some of the symptoms and being interested in any TCM which helps body self-healing. The participants' positive attitude toward the perceived benefit of TCM use was slightly higher than in a local study by Johny et al. (i.e., 39.02 vs 38.8) [6], even though the current study's participants were generally younger. On the other hand, attitude toward perceived barriers to TCM use was also less negative in the current study than in Johny et al. (i.e., 14.82 vs 16.6) [6].

The study findings found that nearly half of the participants in the current study had once taken modern medicine and TCM at the same time. What is more worrisome is that they are self-medicated and did not inform their medical doctor of their usage of TCM. Many studies conducted in Malaysia also reported similar findings in that most participants did not disclose the use of TCM to their doctors [6, 14, 21, 22]. This finding is echoed in recent KAP studies conducted among patient groups in Indonesia, Uganda, and Thailand [23-25] and systematic reviews of diabetic patients and studies conducted in Sub-Saharan Africa [26, 27]. This is possibly due to the lack of awareness about the possible side effects or interactions of TCM and modern medicine. A 2015 study conducted in the Klang Valley found a worrying 51% of the university staff and students interviewed had no awareness of the possible side effects of TCM. Among diabetes patients in Thailand, this figure rose to 73% of participants unaware of potential herb-drug interactions [24]. Other possible reasons for non-disclosure identified from the multi-country studies cited above include the fear of disapproval from their doctors. The physicians did not enquire about the use of TCM in patients and the reciprocal attitude of patients who feel the lack of need to inform their doctors.

Herb-drug interactions between modern medicine and TCM are prevalent due to the widespread acceptance of both modern medicine and TCM [28]. A recent study of the 74,997 reports of adverse drug reactions (ADRs) submitted to the National Pharmaceutical Regulatory Agency in Malaysia found higher odds of experiencing ADRs when TCM was used to treat chronic illnesses [29]. Disclosing the concurrent use of modern medicine and TCM will enable healthcare professionals to check the available herb-drug interactions database to ensure safe implementation and integration of both lines of medical treatments [6, 28].

For most participants, TCM was recommended by their family members, relatives or friends, who also obtained information about its effects. These findings were consistent with other studies in which family beliefs and friends were the major influencers on participants' use of TCM [14, 30, 31]. Another recent study conducted among cancer patients also reported that family members (51%) and other surviving cancer patients (47%) were among the most important sources of information for their TCM use [32]. This is a huge concern as these groups are not trained healthcare professionals and might give inaccurate suggestions or recommendations on TCM use. As per El-olemy et al., about 90% of the students indicated a need for the proper regulation of TCM use by a competent authority, and according to 86.6% of the participants, the community needs proper education on TCM uses [33].

The study finding also identified that the internet was another popular source of information for TCM users

in the current study. With the abundance of online information, it is a challenge for the general public to properly distinguish between facts and potentially misleading information being advertised for such products. According to Silvanathan and Low, there was a lack of knowledge of proper TCM use among users, requiring different campaigns to educate TCM users [34].

Some studies suggested that TCM prevalence was high in the Malaysian population, particularly in applying herbal therapies for health maintenance and health issues [34, 35]. The current study found that the major reason for taking TCM among the participants was their belief that TCM is more natural and has fewer side effects than modern medicine. Besides, their attitude toward the perceived benefits of TCM use was also inclined towards high scores. The findings further supported the evidence from the other local studies in which belief played a critical role in medicine use. Most participants believed TCM was natural, did not contain harmful chemicals, was free of side effects, and was safer than modern medicine [31, 36]. Other studies performed in Taiwan and Singapore also discovered that the individual's health beliefs and attitudes greatly contributed to the decision-making on TCM use and that positive attitudes or beliefs toward TCM were strongly correlated with the frequency of TCM use [13, 21, 25, 37]. Besides, successful testimonials by cancer survivors also played a role in influencing patients' decisions to start using TCM [32]. Therefore, when communicating with patients, healthcare professionals should be sensitive to patients' beliefs, attitudes and perceptions toward TCM, which may facilitate efficient counselling towards the quality and safe use of TCM.

One of the limitations of the current study is that the current TCM users identified had a higher proportion of females and that the Chinese were over-represented in the study, which is quite similar to the proportion of TCM participants found in a similar study focused on a district in Kedah, Malaysia [38]. The convenience sampling technique adopted in the study may have played a role in which only those who were available at the time of recruitment or had access to the internet participated in the survey. Another limitation was that the specific forms of TCM used by the participants were not captured in the questionnaire, thus the need for further probing in future research.

Nonetheless, the prevalence of TCM users in Malaysia is unclear, even more so when TCM is used to treat not only illnesses but for preventive measures, beauty and general well-being. Additionally, most (83.1 %) of the study population had no underlying diseases or medical problems. While 68 % of the study sample mentioned that they used TCM to treat illness, it may be implied that the illness here refers to acute and minor illnesses such as cough and cold. A further study on the use of

TCM to treat chronic illnesses is recommended to be carried out in the future. Secondly, the participants surveyed were generally younger. However, this was in line with the median age of Malaysian in 2019 of below 30 based on the Department of Statistics Malaysia's data (Department of Statistics Malaysia, 2021). Consequently, the generalizability of the findings to Malaysians should be taken with caution and would relate more closely to the young than the elders.

Lastly, there is a possible recall bias, which is common in cross-sectional studies. In assessing the behaviour of TCM use, it is assumed that the responses obtained were accurate, considering that the participants might also forget whether they had taken TCM with modern medicine. Future studies may conduct to examine the attitude/perception domain of those non-TCM users in comparison to the TCM users. Despite the limitations, the study's findings support the need for greater awareness of herb-drug interactions among the general public. Physicians should also adopt a more proactive approach in inquiring about TCM usage among their patients but in a manner that would convince them to share their usage and experience.

## CONCLUSION

This study indicates that most traditional and complementary medicine users in Malaysia do not have adequate knowledge of TCM products. However, the majority reported positive attitudes and practices toward the TCM. The study may help healthcare professionals to provide appropriate guidance regarding the rational use of TCM by understanding more about TCM users' attitudes, practices, knowledge and reasons for using TCM. Policymakers and healthcare professionals may develop an education programme to educate the general public about the importance of consuming only registered TCM. The general public should also be educated that even though TCM products are of natural sources, they are not free from side effects and subject to herb-drug interactions, especially when taking modern medicine and TCM together. The study results will supplement information from the current pool of knowledge and provide evidence for future initiatives in the health education programme and relevant policy development.

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