

# Knowledge and Attitude on the Usage of Traditional Complimentary Medicine (TCM) Among Patients with Diabetes Mellitus in Kuantan, Malaysia

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## ABSTRACT

**Introduction:** Traditional complementary medicines (TCM) have long been used to treat diabetes in Malaysia. However, the usage of TCM by the patients not often is revealed thus, the incidence of complications due to the TCM was not able to be monitored. **Methods:** A cross-sectional quantitative study was conducted on 105 patients with diabetes attended medical specialist clinic and admitted in medical wards in a tertiary hospital in Kuantan Pahang, Malaysia. Knowledge and attitude of the patients towards the usage of TCM were measured using two sets of validated questionnaires consist of 16 items in total. In addition, nine items were used to determine the demographic characteristics of the patients. The data were analyzed descriptively and inferentially with the support of statistical package for Social Sciences (SPSS) version 20. **Results:** Findings showed that, all patients have used at least one type of TCM to treat diabetes however, majority of them have poor knowledge (69.5%) and poor attitude (60%) towards TCM. Ninety percent (90%) admitted they concealed their usage of TCM from the healthcare professionals. **Conclusion:** Usage of TCM seems to be very common among patients with diabetes. However, their lack of knowledge, attitude and their decision to conceal their practice from the knowledge of healthcare professional could lead to a serious issue in long-term. A comprehensive assessment procedure needs to be in place to ensure the usage of TCM is identified to minimize the undesirable complications of the usage if TCM and the diabetes itself.

**Keywords:** Diabetes mellitus, Traditional complementary medicine, Alternative medicine

## INTRODUCTION

Diabetes mellitus (DM) is considered as one of the major public health concerns in Malaysia and has been shown to be closely related to the increased of premature and preventable mortality. In line with the epidemic of DM, the conventional treatment for DM was continuously developed. Several options of diabetes treatment available nowadays ranging from oral hypoglycemic agents up to various types of insulin replacement therapy. However, many

patients seem to remain unsatisfactory of the modern medicine and therefore seeking for traditional medicine (TCM) to replace the conventional treatment(1,2). TCM has been defined as a form of health-related practice designed to prevent, treat or manage ailments or illness or preserve the mental & physical well-being (3). The TCM covers the wide range of health beliefs include traditional Malay medicine, traditional Chinese medicine, traditional Indian medicine, homeopathy, and therapies (4). The usage of TCM among patients with DM is common worldwide (3-6). However in the context of this study, TCM referred to the traditional herbal or plant used by the patients to self-manage their diabetes.

Previous studies have highlighted that most of the patients believed that TCM could control diabetes by lowering the blood sugar and could reduce the symptoms of disease (9,10). However, a study by Kamel et al. (2017) reported that only 30% of their

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participants have good knowledge on TCM particularly on the scientific mechanism of TCM in lowering blood sugar level. Another study revealed that herbs were preferred by patients because it could cure the disease and relieve the symptoms however, their knowledge and understanding on the effect of TCM on the body system is remain low (10,11). There were also several other factors that influenced the decision of the patients on the usage of TCM including accessibility, acceptability, availability and affordability of the TCM (10,11,14). Furthermore, a study conducted in China had reported that influence from family and friends, culture and health beliefs also the important reasons for the patients opted for TCM in treating their diabetes (15). Most of the studies reported on the factors that influenced the decision of the patients on the usage of TCM, but studies on the knowledge of the TCM users on its impact towards body systems are still scarce. Therefore, it could be understood that, understanding of healthcare professionals on the patients' knowledge regarding the impact of TCM either positive or negative is currently minimum.

Safety of TCM usage is an important issue as most of the herbal medication and therapy methods are still under research and of lack of scientific evidence on its effectiveness. It seems that, the usage of TCM had provide more harm than the benefit for the patients. In a review done by Raja et al., (2019) (16), among the undesired effects of TCM on patients with diabetes are poor cardio metabolic control with high density lipoprotein and poor medication adherence which simultaneously lead to the poor glycaemic control. From the review it could be seen that, although TCM is popular and commonly used, the decision of the usage of TCM is usually done without discussion with physician. Additionally, insufficient knowledge and awareness on the complications caused by the unsupervised usage of TCM by the physician could altered the effectiveness of the conventional treatment and could lead to the further complications (17). Many studies revealed that, the patients with diabetes commonly concealed their practice of TCM from the physician. A study by Roy among healthcare professionals (HCPs) in India (18) revealed that, 93% of HCPs agreed that most of the patients were concealed the usage of herbal medicine from them. In parallel, Kamel et al.(11) and Ali-Shtayeh et al. (12) reported that, around 60%-70% of patients in their study had not disclosed and never discussed the usage of herbs with their doctors. Whereas, Azizi-Finni et al. reported that only one fourth of participants had informed their doctors about using herbs in a study involving 500 patients with type 2 diabetes in Iran (9).

Previous literature shows a very high percentage of consumption of TCM among patients with diabetes. Many factors that influenced their decision in using TCM however, their level knowledge and awareness on the effect of TCM and how it could harm their body system are very low. Interestingly, despite of low knowledge on the effect of TCM, most of the patients chose to conceal their practice of TCM from their physician and nurses which could lead to the devastating complications. Although many of the studies conducted in Asian countries which could be presumed as having the similar characteristics and environment as similar, most of the evidence available could not be generalised to the Malaysian population considering the uniqueness of culture, religious belief and the social background of the population. Furthermore, even within the Malaysian country, characteristic of the population within the urban, suburban and rural areas seems to be very much different which could influence their health beliefs and practice of self-management of their diabetes condition. Therefore, it is very important to understand the practice of usage of TCM among patients with diabetes in the specific population so the planning and management could be focus to the problem and issues around the population itself rather than generalising it from other studies. As such, this study aimed to study the knowledge, attitude, and usage of TCM among patients with diabetes in Kuantan, Pahang, Malaysia.

## MATERIALS AND METHODS

### *Study design*

This study was conducted using quantitative cross-sectional research design.

### *Study setting*

This study was conducted in a tertiary healthcare setting in Kuantan, Pahang. One outpatient clinic and four wards has been selected as it provided treatment and consultation for the patients with diabetes. The study settings were labelled as Clinic A, Ward B, Ward C, Wards D, and Ward E.

### *Sampling*

Patients with diabetes mellitus were recruited to this study using systematic random sampling method. The sample size was calculated based on the total population of patients with diabetes in the selected areas at the tertiary healthcare setting in Kuantan using online application, Raosoft Sample Size Calculator with margin error of 5%, confidence interval of 90% and responsive rate of

50%. The estimated sample size was 203 with 10% dropout. The inclusion criteria of the sample selection include; aged of 18 years old and above, diagnosed with Diabetes Mellitus (either type I or type II) and understand and able to communicate in English or Malay language. Each of the potential participants who met the inclusion criteria were given an identification number and gathered in a list. The participants who at the odd number of the list were selected to be participated in the study. The identified participants were approached and being explained about the study. Participants were recruited once they signed the informed consent.

### *Study Instruments*

This study adapted three sets of instruments from the previous studies (11,15,19). The questionnaires were labelled as; Part A (questions related to the sociodemographic characteristics of the participants and the types of TCM that they currently used), Part B measuring the participants knowledge on TCM and Part C measuring the attitude of participants towards TCM. Part A consist of nine items asking about age, gender, educational background, occupation and whether they are using TCM to manage their diabetes. If they answered yes, they were given selection of TCM that they possibly used and they were ask to tick any that they have experienced using. Part B consist of 10 items asking about their knowledge and understanding of TCM and how they gained the knowledge about TCM whereas, Part C of the questionnaires consist of six items asking about their attitude towards the TCM and the reasons for them opted to use TCM in helping them to manage their diabetes. The original questionnaires were published in English however, with the help of language expert it has been translated to Malay and back translated to English to ensure that the language used are easily to be comprehend and understood by the participants. The questionnaires were used in both Malay and English versions.

### *Reliability*

A pilot study was done on the translated questionnaires to test its reliability which involved 10% of the total selected samples. Although the questionnaires were divided in to sections, the reliability test was done as whole involving two dependent variables (knowledge and attitude) and several independent variables (the demographic items) and it shows that, the Cronbach's Alpha test result of 0.861.

### *Ethical considerations*

Ethical approval was received from Kuliyyah of

Nursing Research Committee (KNRC), IIUM Research and Ethical Committee (IREC) and National Medical Research Register (NMRr) Project ID: NMRR-19-141-46316. This study was conducted upon participants' permission by attainment of voluntary consent and the confidentiality of the participants ensured.

### *Statistical analysis*

All data were analyzed using SPSS version 20. Descriptive analysis was conducted for all variables. The level of knowledge were categorized as high (score 7-10), moderate (score 4-6) and low (score 0-3). The attitude was described based on the items asked including; reasons for using TCM, whether they shared the decision of using TCM with their physician, whether they used TCM together with conventional medication and will they recommend the usage of TCM to their family and friends. The responses for attitude were categorized as yes or no. As the data on the knowledge and attitude variables were categorical, chi-square test was used in measuring association between the variables with p value of <0.05 was considered as statistical significance.

## **RESULTS**

### *Socio-demographic characteristics*

Table 1 summarized the demographic characteristics of participants in this study. Due to the low number of admission during the period of data collection, only 120 questionnaires successfully distributed which was 59% from the expected sample size. Furthermore, the elderly population who become the potential participants found that it was difficult to answer the self-administered questionnaire hence, reflected the low participation of the patients in this study. Out of 120 questionnaires distributed, the response received was 88% with 105 participants. Fifteen questionnaires (12%) were not returned and excluded from the study. Table 1 illustrated the demographic characteristics of the participants. Majority of the participants were Malay (48.6%) with age ranges between 20 years old and 65 years old. Large proportion of the participants educated up to diploma (77%). However surprisingly, 14.3% of them has no formal education. Majority of participants are either retired or not working (56.4%) which reflected by the high numbers of elderly population participated in this study. In term duration of having diabetes, the numbers of patients between those who had diabetes more than 10 years and less than five years not much different respectively. It seems that all participants had experience using TCM as one of the method to

manage their diabetes and garlic become the most common being used (27.6%) followed by Ginseng 19%) and bitter gourd (17.%).

Table 1: Demographic characteristics of the participants (N=105)

Socio demographic		Frequency (n)	Percentage (%)
<b>Gender</b>	Male	63	60
	Female	42	40
<b>Age</b>	20- 29	3	2.9
	30- 39	19	18.1
	40-49	13	12.4
	50- 59	35	33.3
	>60	35	33.3
<b>Race</b>	Malay	51	48.6
	Chinese	28	26.7
	Indian	26	24.8
<b>Education level</b>	Uneducated	15	14.3
	Primary school	42	40
	Secondary school	13	12.4
	Certificate/ diploma	26	24.8
	Bachelor/	9	8.6
	Master/ PhD		
<b>Occupation</b>	Working	47	44.8
	Not working	33	31.4
	Retired	25	25
<b>Duration of having diabetes (year)</b>	< 1	5	4.8
	1-5	31	29.5
	5-10	28	26.7
	>10	41	39.0
<b>TCM use</b>	Yes	105	100
	No	0	0
<b>Type of TCM used</b>	Bitter gourd	18	17.1
	Misai	12	11.4
	Kuching		
	Garlic	29	27.6
	Ginseng	20	19.0
	Sabah snake grass	2	1.9
	Basil leaf	2	1.9
	Mas cotek	4	3.8
	<b>Others:</b>		
	Cajuana	1	1.0
	Kratom leaves	10	9.5
	Piper betel	6	5.7
	Starfruit reed	1	1.0

### *Knowledge on TCM, source of information about TCM and the reasons for opted to use TCM*

Generally, majority of the participants have poor knowledge about TCM (69.5%) whereas, only 2.9% showed high knowledge. The participants have agreed that the aspect that they understood about TCM were; it could help to control blood sugar level (55.2%) and TCM could prevent the occurrence of diabetes complications (81%). As most of the TCM used which claimed by the participants are from natural sources (plants and herbs), most of them believed that, it does not have any side effect (73.3%) and it would not cause any harm to the organs (84.8%). Participants reported that, the information about TCM commonly received from their friends and family members. Additionally, there is a proportion of the participants sought the information about TCM from the internet. Majority of the participants highlighted that, the major reason of them opted to used TCM was because it is easily available and better value for money (36.3%). Besides, a high proportion of participants believed that, TCM could help to control diabetes (25.7%). Additionally, participants also claimed that, they opted for TCM because they believed TCM have less side effects as compared to the conventional treatment. The level of knowledge, source of information of TCM and reasons for using TCM is summarised in Table 2.

### *Attitude and perceptions towards diabetes management and TCM*

Participants also were questioned about their attitude and perception towards conventional medicine and TCM. In general, the survey showed that, the patients with diabetes in this study have poor attitude towards TCM (60%). When being asked about their perceptions towards the treatment they received and TCM, 70% of participants claimed that they are not satisfied with the use of conventional medications alone and preferred to combine it with TCM. The most alarming finding was, nearly all of the participants who used TCM in this study (90%) never discussed about their usage of TCM with their physicians. When asked to choose between conventional medication and TCM in treating their diabetes, only 37.1% (39) preferred to use conventional medication. All of these findings were summarised in Table 3.

### Association between level of knowledge and attitude on TCM

A chi-square test was conducted to analyse the association between the level of knowledge of the patients on TCM and the attitude of patients with diabetes towards TCM. A significant association was found between these two variables with  $p$  value of 0.000. The significant finding indicated that the, higher the knowledge that the participants have on TCM would highly influence the attitude of the participants towards the usage of TCM (Table 7). The finding is summarised in Table 4.

Level of knowledge	Frequency (n)	Percentage (%)
Poor	73	69.5
Moderate	29	27.6
High	3	2.9

  

Sources of information	Frequency (n)	Percentage (%)
Family	21	20.0
Friends	59	56.2
Health care professionals	5	4.8
Media	2	1.9
Internet	18	17.1

  

Reasons for using TCM	Frequency (n)	Percentage (%)
Easily available and better value for money	38	36.2
Believe TM can help the diabetes control	27	25.7
Poor physician patient communication	16	15.2
Believed that TM had fewer side effects	11	10.5
Lack of trust of pharmaceutical drugs	9	8.6
Long appointment intervals to see physicians	4	3.8

Table 2: Level of knowledge, source of information about TCM and reasons for using TCM (N=105)

Level of attitude	Frequency (n)	Percentage (%)
Poor	63	60.0
Moderate	40	38.1
Good	2	1.9

  

Perceptions on diabetes management and TCM	Frequency	
	Yes N (%)	No N (%)
Prefer to use anti-diabetic drugs	39 (37.1)	66 (62.9)
Disclose usage to physicians	15 (14.3)	90 (85.7)
Will follow physicians order	18 (17.1)	87 (82.9)
Avoid using with prescribed drugs	21 (20)	84 (80)
Recommend TCM to others	85 (81)	20 (19)
Satisfied with only anti-diabetic	24 (22.9)	81 (77.1)

Table 3: Level of attitude and perceptions towards diabetes management and TCM

Level of knowledge	Attitude			$\chi^2$	$p$ value
	Poor	Moderate	Good		
Poor	63	10	0	82.988 <sup>a</sup>	0.000
Moderate	0	28	1		
High	0	2	1		

Table 4: Association between level of knowledge and attitude of participants' towards TCM (N=105)

## DISCUSSION

This study aimed to measure the prevalence of TCM usage, knowledge and attitude of TCM among patients with diabetes mellitus in Kuantan Pahang. Generally, the usage of TCM among patients with diabetes mellitus in Kuantan Pahang are very common where all patients participated in this study have experienced using at least one type of TCM. Despite the popularity of TCM among patients with diabetes, the findings showed that, the patients have poor knowledge on the scientific mechanism of TCM, its' effectiveness and safety. From the survey, more than half of the patients able to correctly answered the action of TCM to the blood glucose level, however, their knowledge regarding the side effects of TCM on the body system and other organs is alarming. This includes the interaction between TCM with conventional medications and other medications.

Most of the patients in this study believed that TCM are safe to be used as they originally from organic sources. However, a recent study reported that, plants and herbs have been proved to give side effects to the organs due to toxic chemicals such as pesticides and it could be seen in the prolonged usage of TCM regardless of the health conditions (20). Deficiency of awareness of the dangers caused by unsupervised drugs or herbs by the physician could prevent the effectiveness of medication prescribed and could develop further complication (17). In line to this, Davey (2013) who conducted study on effect of herbal medications used as TCM had reported that, plants and herbal medicines can cause kidney failure and liver damage in many consumers due to toxic chemicals such as pesticides and react harmfully with other drugs including the drugs used in managing diabetes. Unlike conventional medications, traditional medicine has little or no scientific evidence of effectiveness or potential harm and no guidance of proper usage. These herbs are not clinically tested or undergone quality control like conventional drugs. Parle & Bansap (22) in their discussion on the safety issue of TCM have highlighted that, the use of garlic may affect normal blood clotting and should be used in precaution on patients taking anticoagulants such as Warfarin. This is an alarming point because garlic has been pointed out by participants in this study as the most common TCM used to treat their diabetes. Unfortunately, in this study we could not confirm on potential side effects that might be experienced by the patients with regards to the usage of TCM as we did not asked about other medications taken by the patients besides anti-diabetes agents. However, data which showed that the decision of the patients opted to take TCM without discussing it with physicians has placed the patients in a very dangerous situation.

Friends and family have been found to be the main sources of information on TCM in this study. In similar, a study in Oman (23) and studies in Taiwan by Chang et al. and Chang et al. (19, 20) also reported that, family and friends were the main source of information about TCM in their study. Most of the patients in this study choose traditional medicine because of easy availability and affordable. This result is in line with qualitative research by Rutebemberwa et al. (14) where the participants in their study claimed that herbs are easy to get and could be consume without any instruction from physician. Based on that, patients think that taking traditional medicine is flexible which can be taken at any

time unlike conventional drugs. This perception would decrease patients' adherence towards the conventional treatment which they thought more troublesome as compared to the TCM or herbal medication. This is consistent with a study from Indonesia which revealed that, the usage of TCM such as plants and herbs decreased the medication adherence of the patients with diabetes in their study (24). Besides, they also claimed that the patients expressed lack of satisfaction of using only conventional medications prescribed by physicians and this also has been found in this study.

One of the alarming finding in this current study was that, almost all of the participants in this study never discussed their usage of TCM with their physicians. This findings seems to be echoed by two other studies conducted in Makkah and Taiwan(11,19). The reasons for concealment of TCM are varied and some of it were due to patient's fear of negative response from physician or could also due to poor communication between patient and physicians. This situation require immediate attention as the unsupervised usage of TCM could lead to other major complications and could increase morbidity and pre-mature mortality among patients with diabetes mellitus in particular. Therefore, it is fair to propose that, a comprehensive assessment tool in identifying the potential and usage of TCM among patients with diabetes is urgently needed.

There is a significant association has been found between the level of knowledge and attitude of the patients on TCM. This finding indicated that the better the knowledge patients have on TCM would reflected on their attitude on the usage of TCM. This seems to be in line with a study conducted in different part in Malaysia where they have reported that, patients with higher education level and higher income have positive association with the independent usage of TCM (25). Although this study does not directly examined the association of the knowledge and attitude on TCM, the level of education and income of the patients reflected on the level of knowledge they could have regarding TCM before decided to use it. Therefore, it is seems to be important for the health care professionals to understand the background of the patients and provide enough information about TCM to minimise the risk that the patients might have with regards to the usage of TCM.

## CONCLUSION

Overall, the patients displayed poor knowledge and attitude regarding the usage of TCM which commonly used in managing their diabetes. The majority of patients in Malaysia are likely to use both conventional and traditional medicines in managing their disease. The findings of this study provided information on the prevalence of the usage of TCM among patients with diabetes which seems to be very common. Furthermore, alarming issues identified in this study could alert the healthcare professionals on the potential risk factors that patients might have with regard to the management of diabetes. As highlighted in this study, an effective assessment tool or method should be in place to identify the practice of usage of TCM among patients with diabetes to ensure that they are closely monitored. Throughout the conduct of this study, several limitation has been anticipated and managed including the recruitment of patients in this study, and the challenge in the conduct of self-administered questionnaires. Future studies with larger sample size would be beneficial to generalize the findings. Furthermore, qualitative studies also seems to be important to be conducted in this area to understand in-depth on the elements that lead to the usage of TCM and decision of the patients to concealed it from the physicians.

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