

Nutrition Status, Perspective and Usage of Traditional and Complementary Medicine among Cancer Patients in Malaysia: A Descriptive Study

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ABSTRACT

Cancer sufferers typically seek a rapid alternative remedy, such as traditional and complementary medicine (TCM). Reliable data on the prevalence and patterns of TCM usage in cancer patients is essential for analyzing its implications for oncological treatment and establishing evidence-based research concepts with the possibility for TCM ongoing education and regulation. This study aimed to determine the prevalence and type of TCM as well as to explore patients' perspectives on TCM and nutrition status among cancer patients in Malaysia. A cross-sectional study was conducted at Institut Kanser Negara and Hospital Kuala Lumpur. The validated Malaysian Breast Cancer Survivorship Cohort (MyBCC) questionnaire and most recent medical record was used. Subjects were followed up after a month to obtain anthropometric data and nutritional intake. A total of 382 qualified patients with a median age of 51.38±11.73 years and 76.7% female were recruited. Ethnicity ($p<0.001$), type of cancer ($p=0.04$), working status ($p=0.015$), and family history ($p=0.012$) were associated with TCM use. Ethnicity showed a significant adverse impact on TCM use [OR=-1.140 (95%CI: 0.170 – 0.603), $p<0.001$]. There were significant changes in total BMI ($p<0.001$) among subjects from pre-diagnosis to follow-up. Overall mean energy and protein intake was 22kcal/kg bodyweight and 0.75gram/kg bodyweight, respectively. Dietary supplements were the most often utilized TCM (79.7%), and 37.3% began using TCM before conventional treatment. Only 56.4% of subjects disclosed their TCM use to their doctor, and 61% believed TCM was useful in cancer treatment. There was no difference in nutritional status between T&CM users and non-users. However, many newly diagnosed cancers patients have shown reluctance to pursue standard therapy, citing fear of side effects as the primary cause. Patient education is essential, and practitioners should be aware of the use and safety of TCM.

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1. Introduction

Cancer is one of the leading causes of morbidity and mortality worldwide (WHO, 2022). The World Health Organization (WHO) estimated that there are 19.3 million new cases and 10.0 million deaths annually (Sung *et al.*, 2020). In Malaysia, 115,238 new cases of cancer were reported between 2012 and 2016 and for all sites combined, the incidence rates were marginally lower by 0.8 for males and slightly higher by 2.3 for females per 100,000 populations (Azizah *et al.*, 2019). The incidence is expected to rise due mainly to the increase in the elderly population and unhealthy lifestyles (WHO, 2022). Cancer, considered a life-threatening disease, often urges cancer patients to look for a quick alternative way like traditional and complementary medicine (TCM) often known as complementary and alternative medicine (CAM) as their life savior (Buckner *et al.*, 2018). TCM practice is defined as a form of health-related practice designed to prevent, treat, or manage ailment or illness or preserve the mental and physical well-being of an individual and includes such practices as traditional Malay medicine, traditional Chinese medicine, traditional Indian medicine, Islamic medical practice, homeopathy, and complementary therapies, but excludes medical and dental practices used by a medical and dental practitioner respectively. Other TCM practices in Malaysia are diversified in nature of their practices.

CAM term is widely used in the United States of America (USA) by the National Centre of Complementary and Alternative Medicine (NCCAM). NCCAM then later known as the National Center for Complementary and Integrative Health (NCCIH) in 2014. CAM was referring to treatment that falls outside of mainstream healthcare where when it is used together with conventional treatment, it is considered complementary and when it is used instead of conventional therapies, it is considered alternative (NCCIH, 2023). From 2001, WHO and Malaysia used the TCM term as a replacement for CAM and we adapted the TCM policy to our national policy based on the WHO Western Pacific Region. TCM merges the terms CM and traditional medicine (TM) (WHO, 2019) which can be defined as a health practice with strong historical and cultural roots, which has global acceptability and applicability (WHO, 2018). Now, complementary and integrative medicine (CIM) is used to reflect that CAM practices have been integrated into mainstream medical care, both offered by the healthcare provider and facilities in coordinated ways in line with the NCCIH Strategic Plan Fiscal Years 2021–2025 (NCCIH, 2021).

Consistent and topical information about the frequency and patterns of TCM usage in cancer patients is essential to assess its implications for oncological care as well as to develop evidence-based concepts for research that have the potential to inform continuing education and regulation in the TCM field (Horneber *et al.*, 2012). TCM is used in addition to conventional cancer therapy (CCT) and may be used as a substitute for adjuvant therapies (Greenlee *et al.*, 2014). Past research has shown that TCM therapies such as massage, acupuncture, yoga, and meditation can improve quality of life (QoL) (Greenlee *et al.*, 2014). There is a broad spectrum of TCM used by patients with cancer including herbs and botanicals, vitamins and minerals, traditional Chinese medicine, homeopathy, and naturopathy, as well as specialized diets (Clarke *et al.*, 2015). NCCAM has classified CAM into five categories for ease of standardization: whole medical system, mind-body medicine, biologically based practices, manipulative and body-based practices, and energy medicine. A study by Farooqui *et al.* (2016) reported that frequently used TCM among cancer patients were nutritional supplements (41.8%), natural products (40.2%), and multivitamins (33.6%). Thus, it is estimated that between 48% and 88% of patients with cancer have reported the use of TCM as part of their therapy (Greenlee *et al.*, 2014). Patients with cancer choose to use CM to improve their QoL and feel more hopeful (Richardson *et al.*, 2000). In addition, the desire to choose CAM can be influenced by the time of cancer diagnosis; more patients are willing to use CAM at the later stage of cancer to overcome the unwanted side effects established from the treatment received and the disease itself (Farahani *et al.*, 2019). However, since CAM is often used simultaneously with conventional medical treatments, in many cases, it is difficult to distinguish the results of these methods from one another and identify the beneficial effects of CAM.

Over the years, nutrition aspects have become a crucial part of cancer care. Nutrition intervention (NI) helps cancer patients maintain good health throughout the cancer treatment. Maintaining a good nutritional status could lead to better treatment tolerance and its side effects, rapid recovery and healing,

decreased risk of infections during treatment, and enhanced overall survival (Marin *et al.*, 2007; Arends *et al.*, 2006; Bauer *et al.*, 2002). However, no research has been done to evaluate the nutritional status among cancer patients who used TCM at any level of cancer stage and find the relationship between TCM usage with cancer patient's nutritional status. The nutritional status and perception of T&CM usage among cancer patients in Malaysia may vary based on individual beliefs, cultural influences & access to healthcare services. To the best of our knowledge, as most cancer patients turn to TCM as a part of cancer treatment (Farahani *et al.*, 2019), there were no available published data and evaluation done on the nutritional status among cancer patients who used TCM at any level of cancer stage and little information is available regarding their perceptions towards TCM. Therefore, this study aimed to determine the prevalence and type of TCM as well as explore patients' perspectives on TCM nutrition status among cancer patients in Malaysia.

2. Materials and Methods

2.1 Study Design & Subjects

This study was a cross-sectional study conducted at Institut Kanser Negara (IKN) and Hospital Kuala Lumpur (HKL) from August 2020 to December 2021. The sample size calculated was 383 subjects (with precision 5% & significant level of 5%) based on the prevalence of T&CM usage by Berreta and colleagues (2016) using the estimation of the proportion of the population (Lemeshow *et al.*, 1990). The study population included cancer patients in outpatient clinics, daycare, or inpatient settings aged 18 years old and above, who were on cancer treatment (chemotherapy, radiotherapy, CCRT, surgery) less than one (1) year post-diagnosis that agreed and consented to be recruited. Critically ill cancer patients, patients on Ryle's tube feeding or parenteral nutrition or nil by mouth, psychiatric disorders, Covid-19 and pregnant patients were excluded. Subjects were followed-up after one (1) month to obtain anthropometric data and nutritional intake. In view of the COVID-19 pandemic during this data collection, other anthropometry measurements were not performed to minimize the risk of infection. Consent was obtained from patients by trained enumerators prior to study recruitment. The study was granted ethical approval from MREC with ID NMRR-20-1168-55002 (IIR).

2.2 Study tool

A survey on TCM usage was performed using a validated questionnaire from The Malaysian Breast Cancer Survivorship Cohort (MyBCC) study (Zulkipli *et al.*, 2018). Data on demographic, clinical characteristics, and nutritional status including dietary assessment and anthropometric data comprising height, weight at baseline, and follow-up of study subjects were retrieved from the latest medical record and documented.

2.3 TCM usage

The validated TCM questionnaire contains five (5) TCM categories in this questionnaire: (i) Whole medical system (Indian or Chinese traditional medicine, and homeopathy), (ii) Mind-body medicine (spiritual/prayer, traditional Malay medicine, yoga, and cupping), (iii) Biologically based practices (dietary supplements), (iv) Manipulative and body-based practices (reflexology and massage), and (v) Energy medicine (Qigong and Tai Chi).

Subjects were individually interviewed by trained enumerators with dietetic background by using a detailed questionnaire that consisted of two parts; Part 1 was on demographic characteristics and Part 2 was on TCM use. The patient's clinical profile, pathological tumor characteristics, and treatment modalities were extracted from the medical record. Patients who reported using TCM were asked to provide further information about their patterns of TCM usage, such as the type, when they first started using TCM, the reasons or motives for using TCM, medical consultations, and their perception of TCM effectiveness. This questionnaire provided information on the type of care received from health care providers, type of health

services received from physicians, use of dietary supplements, and self-help practices of TCM treatment regardless of physician's prescription for subjects in cancer care.

2.4 Dietary assessment

The 24-hour dietary recall (24HR) was used to determine the subjects' overall oral intake. A 24HR is a structured interview intended to capture detailed information about all foods and beverages (and possibly, dietary supplements) consumed by the respondent in the past 24 hours, most commonly, from midnight to midnight the previous day (National Cancer Institute, US Department of Health & Human Services). From the 24HR, energy, and protein consumption were calculated. After 1 month, the dietary intake was reassessed and recorded in the Data Collection Form.

2.5 Statistical Analysis

All data were analysed using the IBM SPSS Statistic version 22.0 (Armonk, NY: IBM Corp). Continuous data such as age, weight and height were presented in means, standard deviation while categorical data such as educational level, working status, and ethnic were presented in frequency and percentage. Categorical data was analysed using Chi-square or Fisher's exact test. Logistic regression model was used to test factor associated with TCM usage. A value of $p < 0.05$ is considered statistically significant.

3. Results and Discussion

3.1 TCM usage among cancer patients and its perspective

A total of 382 eligible patients were recruited with a median age of 51.38 ± 11.73 years. Most TCM users were female (81.2%), Malay (89.5%) with secondary education (57.1%), employed (54.1%) and 41.4% had a family history of cancer. Breast cancer (BC) patients were the highest TCM users where 50.4% of users presented with comorbidities and 38.3% were already at Stage 4. Ethnicity ($p < 0.001$), type of cancer ($p = 0.04$), working status ($p = 0.015$), and family history ($p = 0.012$) had significant associations with TCM use. Table 1 shows the socio-demographic and clinical characteristics of cancer patients during the study period. From the logistic regression model, ethnicity showed a significant negative effect on TCM use [OR = -1.140 (95%CI: 0.170 – 0.603), $p < 0.001$] as shown in Table 2.

Figure 1 shows the type of TCM commonly used among study subjects. Dietary supplements (79.7%) were the most frequent TCM used, followed by traditional medicine (10.5%), body works (3.0%), homeopathy (1.5%), traditional herbal medicine (1.5%), spiritual prayer (0.8%) and acupuncture (0.8%). The study also revealed that 33.6% of TCM users began to use TCM after diagnosis, 28.2% used it before standard treatment and 22.9% used it before cancer diagnosis as shown in Figure 2.

The most common reason given by subjects on TCM usage was family members' recommendation (39.8%). Another 32.3% were attracted to product advertisements. A total of 6.0% believed in TCM usage and were ensured that they have all available treatment options for curing cancer, as 5.3% of subjects started to use TCM due to the advanced stage of cancer. Among TCM users, 26.3% ($n = 35$) were still using TCM throughout the treatment. Only 56.4% ($n = 74$) of users informed their doctor about TCM usage. On the contrary, 9.0% were unsure of doctors' reaction, 6.8% believed that doctors would not comprehend their motives, 2.3% were scared to tell their doctor and 22.7% did not mention the specific reason. Only four users reported TCM side effects including digestive symptoms, depression, and pain.

Table 1 Demographic and clinical characteristics of the participants based on TCM use.

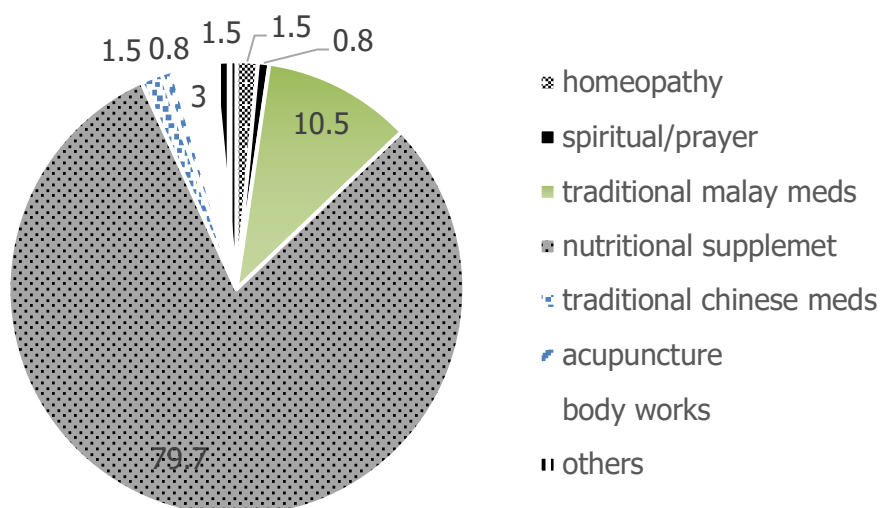
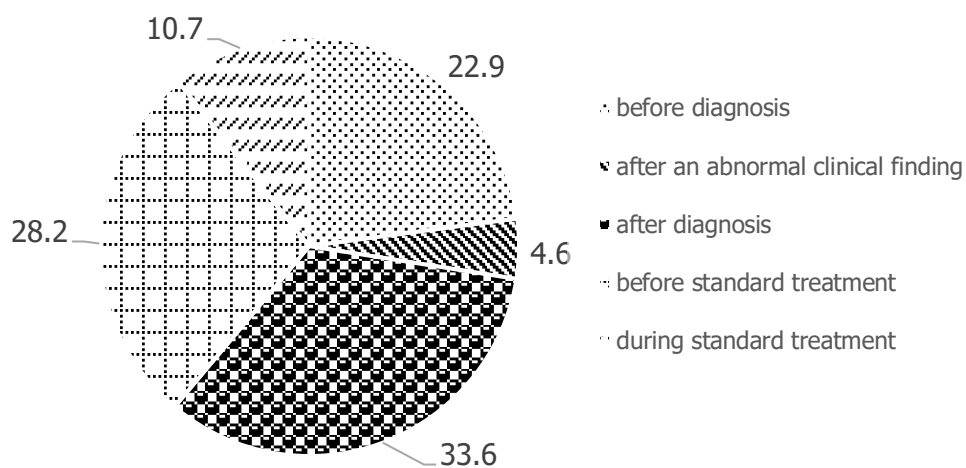
Demographic	All Patients (n = 382)	TCM User (n =133)	Non-TCM User (n = 249)	p-value
Age	51.38 ± 11.73	50.4 ±11.0	51.9±12.1	0.220 ^c
Gender				0.162 ^a
Male	89 (23.3%)	25 (18.8%)	64 (25.7%)	
Female	293 (76.7%)	108 (81.2%)	185 (74.3%)	
Ethnicity				0.000 ^a
Malay	297 (77.7%)	119 (89.5%)	178 (71.5%)	
Chinese	34 (8.9%)	9 (6.8%)	25 (10.0%)	
Indian	40 (10.5%)	4 (3.0%)	36 (14.5%)	
Others	11 (2.9%)	1 (0.8%)	10 (4.0%)	
Education Level				0.207 ^b
No education	7 (1.8%)	1 (0.8%)	6 (2.4%)	
Primary	46 (12.0%)	12 (9.0%)	34 (13.7%)	
Secondary	209 (54.7%)	76 (57.1%)	133 (53.4%)	
University	115 (30.1%)	44 (33.1%)	71 (28.5%)	
Post Graduate	5 (1.3%)	0	2 (2.0%)	
Working status				0.015 ^a
Employed	143 (37.4%)	72 (54.1%)	167 (67.1%)	
Unemployed	239 (62.6%)	61 (45.9%)	82 (32.9%)	
Cancer Type				0.04 ^a
Breast	181 (47.4%)	72 (54.1%)	109 (43.8%)	
Head and neck	29 (7.6%)	10 (7.5%)	19 (7.6%)	
GIT	83 (21.7%)	19 (14.3%)	64 (25.7%)	
Stomach	11 (2.9%)	7 (5.3%)	4 (1.6%)	
Thorax	23 (6%)	5 (3.8%)	18 (7.2%)	
Gynecology	45 (11.8%)	16 (12.0%)	29 (11.6%)	
Others ⁺	10 (2.6%)	4 (3.0%)	6 (2.4%)	
Comorbid condition				0.519 ^a
None	180 (47.1%)	66 (49.6%)	114 (45.8%)	
Yes	202 (52.9%)	67 (50.4%)	135 (54.2%)	
Clinical characteristic				0.44 ^b
Stage of cancer				
0	4 (1.0%)	2 (1.5%)	2 (0.8%)	
1	10 (2.6%)	6 (4.5%)	4 (1.6%)	
2	66 (17.2%)	29 (21.8%)	37 (14.9%)	
3	143 (37.4%)	44 (33.1%)	99 (39.8%)	
4	152 (39.8%)	51 (38.3%)	101 (40.6%)	
Family History				0.012 ^b
Yes	126 (33%)	55 (41.4%)	71 (28.5%)	
No	256 (67%)	78 (58.6%)	178 (71.5%)	

TCM = traditional and complementary medicine; GIT = gastrointestinal tract; ⁺Others: musculoskeletal muscle, renal and skin; ^aChi Square test; ^bFisher's Exact; ^cIndependent T-Test; p-value < 0.05

Table 2 Factors influencing the CAM use ($N = 382$).

Factors	Odd Ratio	95% CI	SE	p-Value
Gender	0.026	0.937 – 1.026	0.326	0.937
Ethnicity	-1.140	0.170 – 0.603	0.323	<0.001**
Working status	-0.456	0.381 – 1.054	0.259	0.079
Comorbidity	0.107	0.684 – 1.809	0.186	0.667
Type of cancer	-0.337	0.410 – 1.031	0.263	0.199
Family history	-0.430	0.427 – 1.195	0.235	0.068

Multinomial Logistic Regression. ** $p < 0.001$

**Figure 1** Type of TCM usage.**Figure 2** Initiation of TCM usage among subjects.

TCM users (61.0%) believed that TCM usage was effective in cancer therapy as it was able to reduce fatigue (34.6%), improve the positive emotional and physical quality of life (QoL) (16.5%), and reduce pain (6.0%). Some TCM users said that it gives calmness and can reduce symptoms like nausea, vomiting, and joint pain. The majority of TCM users did not believe that it should be included in cancer patient care in modern facilities (51.6%), and they would not recommend it to other cancer patients (59.8%). They also disagreed that TCM can help people gain control over their illnesses (43.9%). TCM users also perceived and agreed that more doctors and health practitioners are knowledgeable in the TCM field (85.6%), and should be more regulated (50.0%) as well as more receptive to the use of TCM (62.1%). They also strongly disagree that TCM plays an important role in the survival rate of cancer patients. The majority of TCM users (66.7%) agreed that they feel comfortable having discussions with their doctors regarding TCM treatment.

3.2 Nutritional status

Table 3 shows the nutritional status of the study subjects. Generally, subjects were categorised as overweight, but the overall energy and protein intake was 22kcal/body weight and 0.74gram protein /bodyweight, respectively. No significant weight changes were observed in both groups within 1 month. There was no significant difference in mean weight, protein, and energy intake from first visit, and follow-up session between TCM users and non-users except for BMI.

Table 3 Nutritional status of user participants based on TCM use status.

	All Patients (N = 382)	p-value ^a	TCM User (n =133)	Non-TCM User (n =249)	p-value ^a	p-value ^b
Weight (kg)						
First Visit	64.0±14.4	0.105	64.2±14.9	63.8±14.2	0.499	0.432
Second Visit	63.7±14.5		63.8±15.0	63.6±14.3	0.880	
Height (m)	1.57±0.8		1.57±0.7	1.58±0.8	0.464	
BMI (kg/m²)						
First Visit	25.9±5.6	0.121	26.3±5.9	25.7±5.5	0.307	0.180
Second Visit	25.6±8.1 ^a		26.0±7.5 ^a	25.4±7.8 ^a	0.319 ^b	
Overall weight changes (kg)	0 ±3.3 ^a		0.0±3.4 ^a	-0.1 ± 3.2 ^a	0.916	
Energy Intake (kcal)						
First Visit	1400±385	0.903	1393.6±388	1404±384	0.959	0.738
Second Visit	1399±390		1398.1±395	1399±388	0.986	
Protein Intake (g)						
First Visit	47.9±14.5	0.129 ^e	46.8±13.7	48.4±15.0	0.373	0.295
Second Visit	47.0±17.0 ^a		46.8±14.9	47.5±18.0 ^a	0.150 ^b	

TCM=traditional and complementary medicine; BMI=body mass index; ^aPaired T-Test; ^bIndependent T-Test

4. Discussion

Cancer Patients Often Seek alternative treatments besides conventional ones once diagnosed with better and faster solutions to cancer healing. TCM has become the main focus of cancer patients as one of the alternative treatments they can find for what they believe is for better healing. A study had shown high

prevalence of TCM usage (69.4%) by the Malaysian population, especially herb-based therapies (HBT) usage (23.6% to 29.6%) for both health issues and health maintenance where TCM usage is higher among patients with the non-communicable disease (Zakaria *et al.*, 2021). However, the prevalence of TCM use in this study was comparable to that seen in other studies (14% to 46.1%) among cancer patients in Malaysia (Zakaria *et al.*, 2021) as compared to the study done by Siti and colleagues (2009). New cancer cases are expected to rise due to the increased number of elderly populations and unhealthy lifestyles (WHO, 2022) thus, increasing the CAM frequency pattern among cancer patients. Similar to the prevalence (14% to 62%) reported in several studies in Malaysia, 34.8% of study subjects had utilized some form of TCM since their first diagnosis (Farooqui *et al.*, 2016; Dhanoa *et al.*, 2014).

Common TCM users were BC patients, female, Malay with secondary education which is also similar to the study findings by Razali and colleagues (2020). Initially, ethnicity, family history, working status, and cancer type were significantly associated with TCM usage, however after further analysis; this study found that ethnicity is the only factor that influenced the usage of TCM. Similar findings were also reported by Farooqui and colleagues (2016) and Zulkipli and colleagues (2018). Malay is the highest user of TCM related to the strongest background in traditional beliefs as herbal medicines used are based on experience, observation, and rituals derived from social and religious beliefs (Law & Soon, 2013). Nonetheless, the fact that BC is one of the leading causes of death among Malaysian women may have influenced the findings (MNCR 2019). Unsurprisingly, the use of TCM was greater among patients with advanced cancer; however, the difference was not statistically significant in this study.

Dietary supplements have the highest consumption among the TCM users in this study and are similar to several studies' findings (Farooqui *et al.*, 2016; Razali *et al.*, 2020). The study finding is also similar to most reported studies across Asia and Europe where HBT is the favorite TCM modality used (NCCAM, 2019). The Malaysian government has recently accepted the relevance of TCM in cancer therapy, and herbal medicines have been integrated into the government's healthcare system in several institutions (Loke *et al.*, 2017).

Friends and relatives were the most prevalent TCM information source according to numerous studies, because they are the closest and have the most influence on their treatment decisions. Furthermore, relatives' assertions about TCM's success are bolstered by their ideas about its efficiency, especially if they have prior experience with TCM for a variety of ailments. Moreover, several patients resorted to the news and the internet, where they discovered convincing advertisements for the TCM product. The act may be dangerous since unscrupulous websites may promote TCM without enough safety and efficacy verification data to increase sales; thereby exposing patients to adverse events (Zakaria *et al.*, 2021; Zulkipli *et al.*, 2018). Thus, the physician's role is crucial in disseminating accurate information about TCM's use and potential function in cancer treatments, even though this fact was not addressed in our study.

Many patients believe that TCM can improve their QoL (Greenlee *et al.*, 2014), with some even hoping for a cure (Buckner *et al.*, 2018). Other studies found that many cancer patients believed TCM may improve QoL by boosting the immune system and lowering the negative effects of prescription treatments in addition to fighting cancer (Shaharudin *et al.*, 2011). Also, some research has indicated that cancer patients use TCM to improve their symptoms and suffering (Hwang *et al.*, 2015; Al-Naggar & Abdulghani 2013; Raja Lexzhmi *et al.*, 2013). Almost 60% of TCM users believed that TCM is effective in improving QoL (Al-Naggar *et al.*, 2013).

According to Raja Lexshimi *et al.* (2013), 64% of patients used TCM before receiving conventional treatment (CT), 53% used both TCM with CT, and 98% continued to use TCM after receiving CT. TCM was most commonly used by our study participants shortly after they were diagnosed with cancer and before starting treatment (81.6%). This finding contradicts other study findings where most cancer patients used TCM after CT (Razali *et al.*, 2020). Approximately 14% of the patients utilized TCM in addition to conventional medication, which was lower than the 85.5% reported in a study conducted in Malaysia by Al-Naggar and colleagues (2013). Many physicians find TCM's utilization for cancer challenging since TCM's practice during CT may delay or even preclude oncology treatment, causing unwanted drug interactions or poor adherence to CT since many patients believe that TCM's treatment should be the first line (Razali *et al.*, 2020). Physicians should be informed of TCM use since failing to do so may result in drug-drug

interactions with chemotherapy, targeted therapy, and/or radiotherapy.

Although our study demonstrated a similar result of TCM use after diagnosis and before treatment begins, TCM consumption may lengthen the commencement of CT. Mohd Mujar and colleagues (2017) revealed that TCM usage had caused the delay in presentation rate, diagnosis, and treatment. The same study mentioned that 35% of people put off receiving conventional therapy because they trusted TCM methods. Many patients have shown reluctance to seek standard treatment after getting a cancer diagnosis, citing fear of treatment side effects (Lewandowska *et al.*, 2021) thus contributing to their decision to use TCM. Several kinds of research on the use of TCM among patients expressed the opinion and belief that TCM is beneficial and safe, with few or no negative effects, consequently may lead to poor adherence to normal conventional medications provided by health care practitioners in the long run (Zakaria *et al.*, 2021). Although TCM, particularly herbal products, are thought to be safe by users, they may have negative effects and the potential to cause drug interactions (Zakaria *et al.*, 2021; Tulunay *et al.*, 2015). In a cohort study of 1 901 815 patients, TCM usage varied by several factors and was associated with refusal of CT, and with a 2-fold greater risk of death compared with patients who had no TCM use (Johnson *et al.*, 2018). Hence, physicians play a crucial role in disseminating accurate information about TCM's use and potential function in cancer or CT.

This study highlighted that there were no significant differences in nutritional status among TCM users and non-users. However, significant changes in BMI were observed among study subjects from pre-diagnosed follow-up sessions. This finding needs more attention in the future as previous studies (Greenlee *et al.*, 2017; Tu *et al.*, 2022) showed that high BMI in cancer patients were associated with lower mortality rate and that negative changes in BMI could reduce survival rate and produce a negative outcome (Tu *et al.*, 2022). Because of the COVID-19 pandemic during the data collection period of this current study, other anthropometry measurements were not performed to minimize the risk of infection.

This study was able to provide baseline data on the nutritional status of T&CM usage among cancer patients and this provides better understanding on the perception and pattern of T&CM usage among cancer patients. However, there are several study limitations including potential recall bias and under-reporting on TCM use by study subjects due to human factors.

5. Conclusion

Due to the multi-ethnic and cultural beliefs of the Malaysian community, TCM is frequently used by cancer patients. The most common form of TCM is dietary supplements despite concerns about their efficacy and consumer safety. Lack of consultation and disclosure of TCM usage to healthcare providers demonstrates a need for greater awareness of the importance of open communication between patients and healthcare providers. Healthcare professionals should pay close attention to their patients while discussing with them since a majority of TCM users fail to disclose their usage of the therapy to their doctors. To propose optimal practices for bringing up TCM during the diagnosis consultation, it is essential to figure out the extent of TCM use at diagnosis.

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