Mal J Nutr 23(2): 227 - 238, 2017

Use of Chinese Herbal Medicine and Health-Related Quality of Life among Cancer Patients in Johor, Malaysia

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ABSTRACT

Introduction: Chinese Herbal Medicine (CHM) is becoming increasingly popular among cancer patients worldwide. While health-related quality of life (HRQoL) in relation to cancer outcomes has attracted global attention, there are few studies on CHM use and HRQoL among cancer patients in Malaysia. This study attempted to determine the association between use of CHM, including the types, reasons, and beliefs, and HRQoL among Malaysian cancer patients. **Methods:** A cross-sectional study was conducted among 120 cancer patients (60 male and 60 female) recruited from government oncology clinics in Johor state. A purposive non-probability sampling was applied to recruit respondents. **Results:** Use of CHM was reported by about half of the patients (49.2%). Common types of CHM used included Chinese herbal extracts (27.5%), Sabah snake grass (12.2%), and ginger (11.5%). The median score for overall belief in CHM significantly differed between CHM users (71.7%) and non-users (65.0%) (p<0.001). The HRQoL was generally reported as 'good' with high scores for overall functioning scales and low scores for symptom scales. However, no significant difference in HRQoL between CHM users and non-users was noted. 'Social Functioning' scores between both groups showed a significant difference (p < 0.001) with respect to sex, with females scoring higher than males. No significant association was noted between CHM use and socio-demographic characteristics except for sex. **Conclusion:** There is a high prevalence of self-prescription of CHM among the cancer patients studied. Nonetheless use of CHM did not show any significant difference in terms of quality of life among CHM users.

INTRODUCTION

Chinese Herbal Medicine (CHM), the major component of Traditional Chinese Medicine (TCM), has been increasing in popularity among cancer patients (Cho, 2012). In Malaysia, TCM is included in Traditional and Complementary Medicine (T & CAM) as part of a medical care system developed in China over thousands of years (Cancer Research UK, 2015). A previous study (n=786) reported that 53.9% of cancer patients in Hong Kong used CHM while receiving chemotherapy (Lam *et al*., 2009). The phenomenon is also common in North America where 25–47% of residents were noted to use TCM for cancer care by Chan *et al.* (2010). The trend is similar in Malaysia where a study by Raja Lexshimi *et al.* (2013) found that 30.8% (n=91) of breast cancer patients used TCM to improve treatment outcomes. Moreover, CHM has been positively associated with anti-cancer properties with studies showing that CHM herbs are beneficial chemo-preventives and might be rich sources of natural antioxidants with higher content than both fruits and vegetables (Cai *et al.*, 2003). Maimon *et al.* (2010) also

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suggested that CHM could be a supportive therapy for breast cancer patients during chemotherapy.

In view of the recent upsurge in TCM use with its potential benefits in cancer therapy, health-related quality of life (HRQoL) outcomes have attracted global attention. Normally, HRQoL deterioration is associated with chemotherapy outcomes. The study of HRQoL embraces multidimensional aspects including physical, mental, emotional, social functioning, symptoms, health perception and overall quality of life (Ferrans, 2005). Hematological toxicity from chemotherapy induces side effects such as fatigue, pain, diarrhea, nausea, and vomiting and hair loss. The emotional disturbance of a cancer diagnosis potentially contributes significant negative impacts on the general health and quality of life as patients often delay or reduce the extent of chemotherapy (Al-Naggar *et al.,* 2013). A study by Chan *et al.* (2010) reported that CHM use among the Chinese population in Hong Kong did not affect an overall improvement in the quality of life for cancer patients, even though CHM positively affected the body's immune system. Yaal-Hahoshen *et al.* (2011) reported that using a mixed formula of Chinese herbals significantly prevented chemotherapy-hematological toxicity among early breast cancer patients.

Thus, it appears that CHM use merits investigation as an effective adjuvant in the systemic treatment of cancer, as it could likely improve therapeutic outcomes and quality of life. In Malaysia, Chui *et al.* (2014) reported that 19% of cancer patients received TCM treatment during chemotherapy. Hence, T & CAM, particularly CHM for cancer patients, has achieved a pivotal position among the Malaysian population. It is also irrefutable that CHM has the potential to effectively support therapeutic care while improving the quality of life among cancer patients. Nevertheless, to date, limited studies exist on CHM use and how it could affect HRQoL among cancer patients in Malaysia. Therefore, the main objectives of this study were to identify current CHM usage trends, common forms of CHM employed, as well as patient's beliefs about CHM, and overall HRQoL among cancer patients.

METHODS

Research design

This cross-sectional study was conducted in Malaysia between July and September of 2015. In this study, a total of 120 cancer patients (60 males, 60 females) participated. The target group for sampling was cancer patients, be they CHM users or non-users. The sampling was mainly done at Hospital Sultan Ismail (Johor Bahru) and Hospital Sultanah Nora Ismail (Batu Pahat); five respondents from a cancer society center, a practitioner's clinic, and a Chinese herbal shop located in Johor were also included in the sample. The formula from Yamene (1967) was used for calculation of sample size from a population for a confidence level of 95% with precision being assumed to be 0.5.

Of the 17,763 cancer cases, 18.4% were from Johor. Thus, a minimum of 72 from 391 (18.4%) respondents were needed for the study. However, more respondents than required were recruited for this study as it was hypothesised that there would be more cancer cases not registered in NCR. Thus a total of 120 from 391 (30%) respondents were recruited for this study.

This study took place in Johor because it has the second highest number of cancer cases in Malaysia. This study was registered with the National Medical Research Registration (NMRR) (ID # NMRR-15-512-24993). The Ethics Committees, Medical Research, of Universiti Putra Malaysia (UPM), the Institute for Health Behavioral Research (IHBR), and the Medical Research Ethics Committee (MREC), MOH Malaysia gave their approval for this study.

Sampling design

Simple random sampling was applied whereby towns with a population above 200,000 in Johor state namely, Batu Pahat and Johor Bahru were selected for this study in order to increase the likelihood of recruiting subjects. Besides, purposive non-probability sampling was applied to target cancer patients who were either CHM users or non-users. Furthermore, quota sampling was applied in consideration of sex as a factor. Hence, an equal distribution of both sexes for comparison (Gravetter & Forzano, 2011) was achieved. In the present study, there was no coercion. Patients were approached individually and only those who volunteered to participate proceeded to answer the questionnaire. A written consent form was obtained prior to answering the questionnaire.

Questionnaire

A self-administered questionnaire was used as the research instrument. This questionnaire was organised into five sections namely, socio-demographic characteristics (sex, race, age, marital status, education, household income), clinical information of patients (type, stage and duration of cancer, family history of cancer), use of CHM (frequency, reasons, information sources, and types of Chinese herbal medicine), and health-related quality of life among cancer patients. The latter used modified questions on 10 items from the CAM Health Belief Questionnaire (HBQ) (Lie & Boker, 2004). Using a uniform rating scale, six items were worded negatively to minimise respondent answers for consistency. The last part of the questionnaire presented 28 modified questions to validate a Malay version of the 'European Organization for Research and Treatment of Cancer of Life Questionnaire' (EORTC QLQ-C30) (Yusoff, Low & Yop, 2010). The latter instrument employed five functioning scales that included a single scale for global QoL, three symptom scales, and six individual symptom items (Fayers *et al*., 2001).

The questionnaire was in English and Malay so that respondents from different ethnic groups could easily comprehend the questions. Revisions were made based on the results of a pilot test and feedback from a professional reviewer and a professor of TCM oncology. The Cronbach's alpha for the HBQ and QLQ were 0.823 and 0.839, respectively.

A total of 120 subjects at hospitals, particularly from the oncology department, Cancer Society Center and a practitioner's clinic in Johor Bahru and Batu Pahat were given the questionnaires to fill out. This survey was conducted in July until September 2015. Clear instructions were given by researchers to all the subjects prior to completing the questionnaire, in order to improve subjects' understanding and willingness to participate.

Data analysis

The Statistical Package for Social Science (SPSS, Version 20.0) was used to analyse all data. Besides descriptive statistics, the Mann-Whitney U test was employed to compare results of CHM use and health-related quality of life responses. Association between categorical variables was determined with the cross-tabulation test (Chi-square). Significance value was set at a threshold of $p < 0.05$ for all analyses.

RESULTS

Socio-demographics, clinical characteristics and CHM Information

The top five cancers types were breast (28.3%), colon (23.3%), lungs (11.7%), nasopharyngeal (7.5%) and liver (7.5%). Most males suffered colon (38.3%), lung (18.3%) or prostate cancers (13.3%). The three leading cancers for females were breast (56.7%), cervical (10.0%) and colon (8.3%). Those in Stages III and IV were 30.8 and 25.8% respectively; and 26.7% had been diagnosed with cancer within

Table 1. Socio-demographic characteristics of cancer patients

Variables	*Cancer Patients (n=120)*	
	n	*%*
Mean age	57.3 ± 11.8	
years old		
30 – 49	31	25.8
50 – 69	72	60.0
70 – 89	17	14.2
Gender		
Male	60	50.0
Female	60	50.0
Race		
Malay	40	33.3
Chinese	72	60.0
Indian	7	5.8
Others	1	0.8
Education level		
None	19	15.8
Primary School	42	35.0
Secondary School/ SPM	36	30.0
Tertiary School/ STPM	12	10.0
University/ Degrees	11	9.2
Marital status		
Single	10	8.3
Married	104	86.7
Divorced/ Widowed	6	5.0
Working status		
Unemployed	74	61.7
Employed	29	24.2
Student	5	4.2
Pensioner	12	10.0
Household income (RM/ Month)		
< RM3,000	74	61.7
RM3,000 – RM5,000	31	25.8
RM5,001 – RM7,000	13	10.8
RM7,001 – RM10,000	2	1.7
Alcoholic consumption		
Yes	30	25.0
No	90	75.0
Smoking habit		
Yes	33	27.5
No	87	72.5

Table 2. Information on use of Chinese Herbal Medicine among cancer patients (n=59)

Variables	*Cancer Patients*	
	n	*%*
History of Chinese practitioner consultation		
Yes	26	44.1
No	33	55.9
Started using CHM		
Before clinical treatment	19	32.2
During clinical treatment	20	33.9
After clinical treatment	20	33.9
Duration of CHM use		
<3 month	18	30.5
3-6 month	13	22.0
>6 month	28	47.5
Frequency of CHM Use		
Occasionally/ <1 - 2 times per month	20	33.9
1 – 2 times per week	4	6.8
1 – 2 times per 3 days	5	8.5
1 – 2 times per day	30	50.8

Table 3. Reasons for using Chinese Herbal Medicine

Reasons	**Chui et al. (%)*	*Present Study (%)*
Assisting cancer treating	17.2	28.1
Preventing cancer recurrence and spread	16.0	7.0
Recommended by others	14.7	-
Strengthen body immune system	14.7	20.2
Improving emotional or physical well being	14.7	4.4
Reducing symptoms and side effects	12.0	27.2
Maintain normal level of blood count	8.0	-
To cure the cancer	2.7	13.1

• Chui *et al.* (2014).

the last 1-2 years. Up to 63.3% of patients had no family history of cancer while 0.8% respondents claimed uncertainty about any family history of cancer.

In the present study, almost half the respondents used CHM. More than half the CHM users had self-prescribed CHM without consulting a qualified Chinese Medicine practitioner. They were also prone to combining CHMs with conventional therapies (33.9%), or to using CHM after completing conventional treatment(s) (33.9%). They generally took CHM 1-2 times per day (50.8%) for more than six months (47.5%) as shown in Table 2. Table 3 shows the commonly reported reasons for CHM use. These were (i) to assist cancer treatment; (ii) to reduce symptoms and side effects from conventional treatment; and (iii)

Table 4. Types of Chinese herbal medicine use among cancer patients

Types of herbs	*Cancer patients*	
	n	%
Notoginseng/ San qi	2	1.5
American ginseng/ Xi yang sheng	4	3.1
Ginseng	6	4.6
Lingzhi/ Ling chi	5	3.8
Astragalus/ Huang qi	2	1.5
Chinese red sage/ Danshen	4	3.1
Garlic/ Da shuan	13	9.9
Ginger/ Shen jiang	15	11.5
Golden cotula/ Yang gan ju	2	1.5
Snake-needle grass/ Bia hua she she chao	6	4.6
Cat's whisker tea/ Mao xu cha	1	0.8
Chinese herbal extract	36	27.5
Not sure	16	12.2
OTHERS		
Apricot	1	0.8
Sabah snake grass	16	12.2
Bird's nest	1	0.8
Ophiocordyceps sinensis fungus	1	0.8

to strengthen their immune systems. As for the source of CHM information, most patients reported having been informed by friends (41.7%), family members (29.1%), health professionals (11.7%), recommended by CHM users (8.7%), practitioner (4.9%), internet (2.9%) and newspaper (1.0%).

Some of the herbs commonly used by patients included Chinese herbal extract, Sabah Snake Grass, Ginger etc. as shown in Table 4.

Beliefs in CHM use

Comparison of 'belief' in CHM use showed no significant difference between gender ($p > 0.05$). However, the majority of males (46.6%) disagreed that CHM use would reduce the effectiveness of conventional treatment, while 38.3% of female respondents were in agreement. On the other hand, the majority of both males and females agreed that a combination of CHM with conventional treatment might lead to herb-drug interactions.

A comparison of CHM users and non-users found the median score for overall CHM beliefs to differ significantly (71.7% vs. CHM 65.0%) ($p< 0.001$). Forty-eight percent (48%) of CHM users thought that the use of CHM would interrupt or delay results from standard conventional treatment, while 41% of non-users disagreed. Table 5 shows that both males (58.3%) and females (73.7%) agreed that there was a potential for herb-drug interactions when combining CHM use with conventional treatment.

Health-related quality of life among cancer patients

Generally, cancer patients deemed their HRQoL as 'good' with high scores for 'overall functioning' scales and low scores for 'symptoms'. However, there was no significant difference between CHM users and non-users, and when HRQoL was compared between the sexes. The 'social functioning' subscale showed significant difference with females scoring higher than males. Results showed no significant association between CHM use and socio-demographics except for sex. None of the

Table 5. Beliefs, attitude, agreement between sex and between CHM users and non-users

No.	*Beliefs*	*Male (n=60)*			*Female (n=60)*			*CHM user (n=59)*			*CHM Non-user (n=61)*		
		Disagree n *(%)*	*Neutral n (%)*	*Agree n (%)*	*Disagree n (%)*	*Neutral n (%)*	*Agree n (%)*	*Disagree n (%)*	*Neutral n (%)*	*Agree n (%)*	*Disagree n (%)*	*Neutral n (%)*	*Agree n (%)*
1.	To maintain physical and mental health by using CHM.	3 (5.0)	23 (38.3)	34 (56.7)	6 (10.0)	29 (48.3)	25 (41.7)	4 (6.8)	13 (22.0)	42 (71.2)	5 (8.2)	39 (63.9)	17 (27.9)
2.	Health and disease are a reflection of Ying and Yang 's balance.	3 (5.0)	27 (45.0)	30 (50)	5 (8.4)	41 (68.3)	14 (23.3)	3 (5.1)	22 (37.3)	34 (57.6)	5 (8.2)	46 (75.4)	10 (16.4)
3.	CHM use is a threat	26 (43.3)	25 (41.7)	9 (15.0)	28 (46.6)	22 (36.7)	10 (16.7)	34 (57.6)	16 (27.1)	9 (15.3)	20 (32.8)	31 (50.8)	10 (16.4)
4.	Discourage non-science –based treatment.	30 (50)	16 (26.7)	14 (23.3)	24 (40.0)	15 (25.0)	21 (35.0)	33 (55.9)	15 (25.4)	11 (18.6)	21 (34.4)	16 (26.2)	24 (39.4)
5.	CHM benefits are usually due to psychological effect	28 (46.7)	21 (35.0)	11 (18.3)	25 (41.7)	23 (38.3)	12 (20.0)	30 (50.9)	15 (25.4)	14 (23.7)	23 (37.7)	29 (47.5)	9 (14.8)
6.	CHM stimulates the body's natural therapeutic powers.	4 (6.7)	22 (36.7)	34 (56.6)	4 (6.6)	31 (51.7)	25 (41.7)	5 (8.5)	20 (33.9)	34 (56.6)	3 (4.9)	33 (54.1)	25 (41.0)
7.	Use of CHM causes undesirable effects.	32 (53.3)	19 (31.7)	9 (15.0)	28 (46.7)	27 (45.0)	5 (8.3)	37 (62.7)	14 (23.7)	8 (13.6)	23 (37.7)	32 (52.5)	6 (9.8)
8.	Satisfied with benefits of using CHM.	12 (20.0)	30 (50.0)	18 (30.0)	8 (13.3)	41 (68.4)	11 (18.3)	10 (16.9)	22 (37.3)	27 (45.8)	10 (16.4)	49 (80.3)	2 (3.3)
9	CHM use reduces the effectiveness of conventional treatment.	28 (46.6)	13 (21.7)	19 (31.7)	16 (26.7)	21 (35.0)	23 (38.3)	28 (47.5)	14 (23.7)	17 (28.8)	16 (26.2)	20 (32.8)	25 (41.0)

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Table 5. Continued

No.	Beliefs	Male (n=60)			Female (n=60)			CHM user (n=59)			CHM Non-user (n=61)		
		Disagree n (%)	*Neutral n (%)*	*Agree n (%)*	*Disagree n (%)*	*Neutral n (%)*	*Agree n (%)*	*Disagree n (%)*	*Neutral n (%)*	*Agree n (%)*	*Disagree n (%)*	*Neutral n (%)*	*Agree n (%)*
10.	There is potential of herb-drug interactions.	13 (21.7)	12 (20.0)	35 (58.3)	10 (16.7)	10 (16.7)	40 (66.6)	15 (25.4)	14 (23.7)	30 (50.9)	8 (13.1)	8 (13.1)	45 (73.8)
11.	Survival is motivated by family support.	0 (0.0)	3 (5.0)	57 (95.0)	1 (1.7)	2 (3.3)	57 (95.0)	1 (1.7)	3 (5.1)	55 (93.2)	0 (0.0)	2 (3.3)	59 (96.7)
12.	Spiritual beliefs is not important in cancer healing.	53 (88.3)	5 (8.3)	2 (3.3)	53 (88.3)	5 (8.3)	2 (3.3)	50 (84.7)	6 (10.2)	3 (5.1)	56 (91.8)	4 (6.6)	1 (1.6)

Disagree = 0 – 59%; Neutral= 60 - 79%; Agree= 80-100%

clinical characteristics were significantly associated with CHM use.

DISCUSSION

This study reflects a growing interest in CHM among cancer patients. However, self-prescribing CHM together with conventional treatment can result in herb-drug interactions when undergoing chemo- or radio-therapy. A prior study suggested that 27.0% of patients who took oral CAM during chemotherapy might have experienced additional toxicity (Gupta *et al*., 2002). Nevertheless, Malaysia's government has recently acknowledged the role of TCM in the treatment of cancer and has integrated herbal therapies within the government's healthcare system (Maimunah *et al*., 2011). Such an integrated medical scheme indicates that a combination of TCM with conventional treatment is generally not problematic under professional auspice.

Many cancer patients use CHM because they believe it will assist cancer treatment, reduce symptoms, strengthen the body's immune system, and counteract the side effects that accompany conventional treatment. Chui *et al.* (2014) found similar results as common reasons for CHM use by cancer patients; again indicating that most patients seek CHM as a complement to conventional cancer treatment rather than a replacement. Our finding indicates that the role of qualified practitioners as a source of CHM information is insignificant at present, likely due a publicly perceived risk of disapproval or therapeutic invalidation of conventional treatment.

A previous study reported that the Chinese herbal extract called Shenqi Fuzheng effectively inhibited tumor growth with a potential anti-tumor effect similar to chemotherapy (Dong *et al*., 2010). Sabah Snake Grass (*Berlalai Gajah*) was also widely used by our respondents (12.2%). It naturally abounds in Malaysia and local tradition claims it is able to cure cancer. Cheong *et al.* (2013) reported that (*C. Nutans, aka: Berlalai Gajah*) is rich in phytosterols and triterpenoid compounds that have antioxidants properties and anti-proliferative effects on cultured human cell lines. However, to our knowledge, it has not been tested clinically in cancer patients and proper dosage and frequency remain unclear. A recent systemic review involving 11 studies suggests that ginger may be beneficial in alleviating chemotherapy-induced nausea and vomiting (CINV) for some patients. The present finding indicated that men and women shared a moderate belief level (60–79%) regarding CHM use (Marx *et al*., 2013). Moreover, the majority of respondents believed there was potential for undesirable herb-drugs interactions when combining CHM with chemotherapy. A possible explanation for this is their low level of knowledge of modern therapeutics and TCM integrated medicine. Both males and females appear to believe in CHM use for cancer treatment while holding degrees of skepticism at the same time. Such incongruous beliefs suggest there is room for the acceptance of integrated CHM therapeutics by cancer patients.

In contrast, Farooqui *et al.* (2011) reported that cancer patients in Malaysia held different views on conventional therapies and that those with a more positive attitude towards orthodox treatment had less of a desire to seek CAM than did patients with a negative perception of contemporary cancer therapy. Another study by Chan *et al.* (2015) revealed that respondents with a history of TCM consultation demonstrated a more positive attitude towards TCM use than did respondents without TCM experience. Therefore, when contributing our results to findings from previous studies, it appears that CHM users hold a more positive belief in CHM than non-users.

In general, HRQoL as reported by respondents was good, with high scores

in 'overall functioning' and low scores in 'symptoms'. On the other hand, gender differential item functioning (gender-GIF) hypothesis proposed that women for certain reasons, irrelevant to social function, will tend to report more trouble in carrying out all the family and friends activities as well as holding up family responsibilities. Females tend to report greater limitations on doing fun things, social activities outside home and work (Hahn *et al.*, 2016). This seems to suggest that women tend to have a lower social functioning index as opposed to the present study. However, some of the findings of the present study differs from other studies perhaps due to the influence of other underlying demographic factors.

When comparing HRQoL between CHM users and non-users, similar findings from a previous study showed no significant difference (Chui *et al.*, 2015). Another study demonstrated that herbal remedy users and non-users' alike had comparable 'mental component' summary scores but with reduced 'physical' scores for herbal remedy users compared to non-users (Ma *et al.*, 2011). The present study also concluded that CHM efficacy had no significant effect on HRQoL for users as well as no obvious clinical advantage.

Except for gender, the present study showed no significant association between CHM use and socio-demographic characteristics, which suggests that gender is a possible factor that predicts a higher prevalence for CHM use by female cancer patients. Several studies have reported similar findings. For example, Liao *et al.* (2012) reported higher TCM use by women than by men among liver cancer patients. In addition, Shih *et al.* (2012) also found that the average use of TCM in women is higher than in men across ages 20-69. This could be due to women's propensity to seek help (Oliver *et al.*, 2005). It is also proposed that women have a higher tendency to use other forms of health care especially TCM (Bishop & Lewith, 2008).

CONCLUSION

This study showed a high prevalence of CHM use among cancer patients, which demonstrates a trend of CHM use by cancer patients who present with late stage disease and shorter post-diagnostic treatment periods (duration). It appears that their main incentive for CHM use is as an adjunct to assist cancer treatment and minimise symptoms and side effects. The key finding of this study is that the majority of CHM users self-prescribed without the supervision of a licensed Chinese medicine practitioner and Chinese herbal extract was the main type of CHM use in this study's population. Even though, CHM users demonstrated a higher belief in its beneficial effects, their health-related quality of life did not differ statistically from their non-CHM user counterparts.

ACKNOWLEDGEMENT

The authors would like to thank Professor Du (oncology specialist from Tung Shin Hospital) and all our volunteer cancer patients.

Conflict of interest

There is no conflict of interest to be declared.

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