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The Association Between Musculoskeletal Symptoms and Traditional Chinese Medicine Use Among Chinese Older Adults in the Greater Chicago Area

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Abstract

Older adults disproportionately experience musculoskeletal symptoms, which are associated with morbidity and mortality. Traditional Chinese medicine (TCM) is an important part of Chinese culture and for millennia have been used to maintain health. This article aims to examine the association between musculoskeletal symptoms and different subtypes of TCM usage. Data were collected through the Population Study of Chinese Elderly in Chicago (PINE) study, a community-engaged, epidemiological study of a U.S. Chinese population. Review of systems was used to measure musculoskeletal symptoms. TCM use was measured by using a 5-point scale. Logistic regression analyses were conducted to control for potential confounding factors. Of 3,157 Chinese, older adults aged 60 and older, the mean age was 72.8 (*SD* = 8.3) and 58.9% were female. Older adults with any musculoskeletal symptoms had greater utilization of overall TCM use (odds ratio [OR] = 2.10, 95% confidence interval [CI] = [1.76, 2.52]), especially massage therapy (OR = 3.41, 95% CI = [2.51, 4.63]), herbal (OR = 2.68, 95% CI = [2.28, 3.14]), and acupuncture (OR = 2.49, 95% CI = [1.87, 3.32]). However, there was no statistically significant association between the presence of musculoskeletal symptoms and Tai-Chi (OR = 1.18, 95% CI = [0.93, 1.50]). This study demonstrated that musculoskeletal symptoms among Chinese older adults were strongly associated with the use of TCM. Future research is needed to examine the effectiveness of TCM in treating musculoskeletal symptoms.

Keywords

traditional Chinese medicine (TCM), musculoskeletal symptoms, Chinese aging, older adults

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Introduction

Musculoskeletal diseases are prevalent and affect a large population across the world. According to a population-based survey, about 20% of adults reported their persistent pain was related to musculoskeletal conditions (Woolf & Pfleger, 2003). The prevalence of musculoskeletal conditions showed to be strongly associated with increased age. As the natural consequences of aging, losses of muscle and bone tissue make older adults more vulnerable to musculoskeletal symptoms (Nedergaard, Henriksen, Karsdal, & Christiansen, 2013). A study with 4,000 community-dwelling older adults in Hong Kong reported that 48% of participants reported back pain, 31% with knee pain, 22.5% with neck pain, and 8.9% with hip pain (Woo, Leung, & Lau, 2009). Older adults disproportionately experience painful musculoskeletal conditions that impede the process of healthy aging (Wilkie, Tajar, & McBeth, 2013). The World Health Organization has indicated that musculoskeletal conditions were associated with chronic pain, physical disability and morbidity among older adults (Briggs et al., 2016). Even worse, increased risk of mortality is also associated with musculoskeletal conditions, especially with low abdominal muscular endurance (Katzmarzyk & Craig, 2002) and osteoporotic fracture (Bliuc et al., 2009). According to Global Burden of

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Disease Study 2010, deaths potentially caused by musculoskeletal disorders occupied 0.3% of all deaths in 2010 (Lozano et al., 2012).

Several studies demonstrated the effectiveness of current pain management or treatment options used for treating musculoskeletal symptoms, such as medical exercise therapy (Lorås, Østerås, Torstensen, & Østerås, 2015). However, some prevailing treatments are proven to be potentially harmful. As a commonly used pain treatment, painkillers may have the side effect after a long-term use (Tramèr, Moore, Reynolds, & McQuay, 2000). Moreover, some effective strategies are too expensive that not affordable for low-income population. Thus, the weaknesses of established treatments may encourage people to use alternative methods, such as traditional Chinese medicine (TCM). The role of TCM is emphasized by Chinese as the significant supporter to health management among older people (Wong, Lam, Griffiths, Chung, & Yeoh, 2010). As one of the commonly used type of TCM, one single dose of Chinese herbal medicine can be mixed by one or more herbs, varied by different types of diseases and symptoms among patients (Yang, Liang, Chu, Chen, & Lin, 2015). Research has found that most of complementary alternative medicine (CAM) that used to manage pain was by patients who were suffering from musculoskeletal disorders (Linde, ter Riet, Hondras, Vickers, Saller, & Melchart, 2001).

Even though limited studies explored musculoskeletal conditions among Chinese older adults in the United States, existing knowledge has established that Chinese older adults similarly suffer from musculoskeletal symptoms as other populations. The results of Population Study of Chinese Elderly in Chicago (PINE) study showed that over two thirds of Chinese older adults in greater Chicago area experienced musculoskeletal symptoms (Dong, Chang, & Bergren, 2014). The presence of musculoskeletal symptoms could be a potential factor that increases the use of TCM among Chinese population. According to the aforementioned PINE study, there are different demographic correlations when it comes to both musculoskeletal symptoms and TCM use (Dong, Bergren, & Chang, 2015; Dong et al., 2014). Therefore, there may be unique participant characteristics among Chinese older adults, which influence the relationship between musculoskeletal symptoms and TCM use.

However, there is limited knowledge about the association between musculoskeletal symptoms and TCM use regarding the population of Chinese older adults in the United States, which may be different from both Chinese populations in China and Western populations due to factors related to immigration. To fill the research gap, this study aims to examine the association between musculoskeletal symptoms and utilization of TCM among Chinese older adults in greater Chicago area, and to examine this association across different subtypes of TCM usage. This study allows us to test our hypothesis that musculoskeletal symptoms are strongly associated with TCM use among U.S. Chinese older adults in greater Chicago area.

Method

Population and Settings

As a population-based epidemiological study of U.S. Chinese older adults aged 60 and older in the greater Chicago area, the PINE study aimed at collecting community-level data to examine the cultural determinants of health and well-being among Chinese older adults (Dong, 2014). Based on the data from U.S Census 2010 and a random block census project, the PINE study was representative of the Chinese aging population in the greater Chicago area (Simon, Chang, Rajan, Welch, & Dong, 2014). To ensure a culturally and linguistically sensitive approach, and expand the research influence by recruiting more Chinese older adults, PINE study used a community-based participatory research approach that involved more than 20 community agencies (Dong, Chang, Simon, & Wong, 2011). Eligible participants were approached during social services and outreach efforts. Semistructured interviews were conducted by trained research assistant by using the language based on participants' preferences, including English, Mandarin, Cantonese, and other dialects of Chinese (Chang, Simon, & Dong, 2012). In all, 3,157 out of 3,542 eligible participants enrolled in this study, with the response rate of 91.9%. Further details could be found in our existing publications (Dong, Wong, & Simon, 2014). The study was approved by the institutional review boards (IRBs) of the Rush University Medical Center. The IRB number is 10090203-IRB02.

Measures

Dependent variables. The TCM use was assessed by using a 5-point scale (0 = *none*, 1 = *at least once in the previous year*, 2 = *at least once a month*, 3 = *at least once a week*, 4 = *at least once a day*). Participants were asked to report "How many times per year do you use . . .?" based on their recent experiences. Eight subtypes of TCM were assessed separately, including prescribed herbal products, over-the-counter herbal products, prescribed herbal topical, over-the-counter herbal topical, acupuncture, massage therapy, Tai-Chi, and other types of TCM. In this study, the first four subtypes of TCM (prescribed herbal products, over-the-counter herbal products, prescribed herbal topical, over-the-counter herbal topical) were included in one overall herbal type. Thus, the original eight subtypes of TCM in the assessment were categorized into five groups to examine its association with musculoskeletal symptoms: herbal, acupuncture, massage therapy, Tai-Chi, and other types of TCM. To adopt logistic regression for data analysis, this variable was dichotomized into "any use" (1 = *at least once in the previous year*, 2 = *at least once a*

month, 3 = *at least once a week*, 4 = *at least once a day*) and "none use" (0 = *none*).

Independent variables. The presence of musculoskeletal symptoms was assessed by asking whether participants had the symptoms in the past according to their medical conditions. Six types of musculoskeletal symptoms were assessed: muscle or joint pain, stiffness, back pain, redness of joints, swelling of joints, and trauma. In this study, we first used the total score of these six types and examined the association between the presence of any types of musculoskeletal symptoms and TCM use. Then we analyzed six musculoskeletal symptoms separately to figure out its association with TCM use. We also paid attention to the number of the concurrence of musculoskeletal symptoms to see if the experience of more types of symptoms was associated with more frequent TCM use.

Covariates. Basic demographic information was collected, including age, sex, education level, income, marital status, household composition, the number of children, country of origin, language preference, years in the United States, and years in the community.

Data Analysis

To examine the association between musculoskeletal symptoms and TCM use, this study used logistic regression models and controlled for covariates. The full model was adjusted for age, gender, education, income, marital status, household composition, the number of children, years in the United States and years in the community. Odds ratios (ORs), 95% confidence intervals (CIs), and significance levels were reported. Statistical analyses were conducted by using SAS version 9.2 (SAS Institute Inc., Cary, North Carolina).

Results

Sample Characteristics

The mean age of older adults enrolled in the PINE study was 72.8 years (*SD* = 8.3, range = 60-105). Among the 3,157 participants, 58.9% were female, 78.9% had at least a high school education, and 85.1% had an annual income below US$10,000 (Dong & Li, 2016). Over two thirds (67%) of the participants reported to have any type of musculoskeletal symptoms in the past (Dong et al., 2014), and over three fourths (76%) of them reported any use of TCM within the past year (Dong et al., 2015).

Association Between Presence of Musculoskeletal Symptoms and TCM Use

Table 1 presented the association between the continuous presence of musculoskeletal symptoms and TCM use. After adjusting for covariates, more types of musculoskeletal symptoms were associated with higher rate of overall TCM use (OR = 1.47, 95% CI = [1.35, 1.60]), which means every 1 point higher in musculoskeletal symptoms was associated with 1.47 times more overall TCM use. Regarding five subtypes of TCM, more types of musculoskeletal symptoms were associated with greater utilization of herbal (OR = 1.67, 95% CI = [1.55, 1.81]), massage therapy (OR = 1.56, 95% CI = [1.43, 1.71]), and acupuncture (OR = 1.43, 95% CI = [1.31, 1.57]). In other words, every 1 point higher in musculoskeletal symptoms was associated with 1.67 more times use of herbal use, 1.56 more times use of massage therapy, and 1.43 more times use of acupuncture.

Table 2 presented the association between any musculoskeletal symptoms and TCM use among Chinese older adults. After adjusting covariates, reported presence of at least one type of musculoskeletal symptoms was associated with higher rate of overall TCM use (OR = 2.10, 95% CI = [1.76, 2.52]). As for the five subtypes of TCM, presence of any musculoskeletal symptoms was associated with more use of massage therapy (OR = 3.41, 95% CI = [2.51, 4.63]), herbal (OR = 2.68, 95% CI = [2.28, 3.14]), and acupuncture (OR = 2.49, 95% CI = [1.87, 3.32]). However, the presence of any musculoskeletal symptoms was not significantly associated with the use of Tai-Chi (OR = 1.18, 95% CI = [0.93, 1.50]) and other types of TCM (OR = 1.00, 95% CI = [0.83, 1.20]).

Association Between Different Types of Musculoskeletal Symptoms and TCM Use

The association between four types of musculoskeletal symptoms and different subtypes of TCM use were presented in Table 3. As the data sample was too small to perform valid data analysis, musculoskeletal symptoms of swelling of joints and trauma were excluded. All four types of musculoskeletal symptoms were significantly associated with greater overall TCM use, after adjusting for age, gender, education, income, living arrangement, marital status, number of children, years in the United States and years in the community. Musculoskeletal symptom of stiffness was significantly associated with higher rate of herbal (OR = 1.70, 95% CI = [1.41, 2.05]), acupuncture (OR = 1.34, 95% CI = [1.04, 1.72]), and massage therapy use (OR = 1.51, 95% CI = [1.18, 1.93]). Participants who reported to experiencing back pain were also more likely to use herbal (OR = 2.04, 95% CI = [1.53, 2.73]), acupuncture (OR = 1.64, 95% CI = [1.18, 2.28]), and massage therapy (OR = 1.89, 95% CI = [1.37, 2.60]). Similar findings were found in redness of joints, people who had redness of joints reported significantly greater utilization of herbal (OR = 4.81, 95% CI = [2.60, 8.99]), acupuncture (OR = 3.27, 95% CI = [2.09, 5.11]) and massage therapy use (OR = 3.12, 95% CI = [2.00, 4.88]). In contrast, the symptom of stiffness was significantly associated with less other TCM use (OR = 0.78, 95% CI = [0.63, 0.96]). There were still no

Table 1. Association Between Musculoskeletal Symptoms and TCM Use Among Older Adults (Continuous).

	OR (95% CI) *p* value					
	Overall TCM use	Herbal use	Acupuncture use	Massage therapy use	Tai-Chi use	Other TCM use
Age	0.99 [0.97, 1.00]*	0.98 [0.97, 0.99]***	0.97 [0.96, 0.99]***	1.01 [0.99, 1.03]	1.01 [1.00, 1.03]	1.01 [0.99, 1.02]
Female	1.33 [1.10, 1.60]**	0.97 [0.82, 1.15]	1.41 [1.09, 1.82]**	1.06 [0.82, 1.37]	1.35 [1.06, 1.72]*	1.23 [1.02, 1.49]*
Education	1.01 [0.99, 1.03]	0.96 [0.95, 0.98]***	1.02 [0.99, 1.05]	1.03 [1.01, 1.06]*	1.14 [1.11, 1.17]***	1.02 [1.00, 1.04]*
Income	0.95 [0.88, 1.03]	0.94 [0.87, 1.01]	0.96 [0.86, 1.07]	0.99 [0.88, 1.10]	0.92 [0.83, 1.02]	0.99 [0.91, 1.07]
Married	1.00 [0.80, 1.25]	0.98 [0.80, 1.20]	0.92 [0.70, 1.22]	0.67 [0.51, 0.88]**	0.78 [0.59, 1.02]	1.03 [0.83, 1.28]
Household composition	1.00 [0.95, 1.05]	1.00 [0.96, 1.05]	1.00 [0.94, 1.07]	0.97 [0.91, 1.04]	0.98 [0.92, 1.05]	0.95 [0.90, 0.99]*
Children	1.03 [0.97, 1.10]	1.10 [1.04, 1.17]**	1.00 [0.91, 1.09]	0.92 [0.85, 1.00]	0.97 [0.89, 1.06]	0.93 [0.87, 1.00]*
Years in the United States	0.99 [0.98, 0.99]***	0.99 [0.98, 0.99]***	1.00 [0.99, 1.02]	1.00 [0.99, 1.01]	0.99 [0.97, 1.00]	1.00 [0.99, 1.01]
Years in community	1.02 [1.01, 1.03]**	1.02 [1.01, 1.03]***	1.02 [1.01, 1.03]**	1.02 [1.01, 1.03]**	1.01 [0.99, 1.02]	0.98 [0.97, 1.00]**
Continuous musculoskeletal symptoms	1.47 [1.35, 1.60]***	1.67 [1.55, 1.81]***	1.43 [1.31, 1.57]***	1.56 [1.43, 1.71]***	1.05 [0.95, 1.16]	1.05 [0.97, 1.13]

Note. Model adjusted age, gender, education, income, living arrangement, marital status, number of children, years in the United States and years in the community. TCM = traditional Chinese medicine; OR = odds ratio; CI = confidence interval.
*$p < .05$. **$p < .01$. ***$p < .001$.

Table 2. Association Between Musculoskeletal Symptoms and TCM Use Among Older Adults (Any Type of Musculoskeletal Symptoms).

	OR (95% CI) *p* value					
Model D	Overall TCM use	Herbal use	Acupuncture use	Massage therapy use	Tai-Chi use	Other TCM use
Age	0.99 [0.97, 1.00]*	0.98 [0.97, 0.99]***	0.97 [0.96, 0.99]**	1.01 [0.99, 1.03]	1.01 [1.00, 1.03]	1.01 [1.00, 1.02]
Female	1.36 [1.13, 1.65]**	1.02 [0.86, 1.20]	1.47 [1.14, 1.90]**	1.13 [0.88, 1.46]	1.34 [1.05, 1.72]*	1.26 [1.04, 1.51]*
Education	1.00 [0.99, 1.02]	0.96 [0.95, 0.98]***	1.02 [0.99, 1.04]	1.03 [1.01, 1.06]*	1.14 [1.11, 1.17]***	1.02 [1.00, 1.04]*
Income	0.94 [0.87, 1.02]	0.93 [0.86, 1.00]*	0.95 [0.85, 1.06]	0.97 [0.87, 1.08]	0.92 [0.83, 1.02]	0.99 [0.91, 1.07]
Married	0.97 [0.78, 1.22]	0.94 [0.77, 1.15]	0.88 [0.67, 1.16]	0.64 [0.49, 0.84]**	0.77 [0.59, 1.02]	1.02 [0.82, 1.27]
Household composition	1.00 [0.95, 1.05]	1.01 [0.97, 1.05]	1.01 [0.94, 1.07]	0.98 [0.91, 1.04]	0.98 [0.92, 1.05]	0.95 [0.90, 0.99]*
Children	1.03 [0.96, 1.09]	1.09 [1.03, 1.16]**	0.99 [0.91, 1.08]	0.92 [0.84, 1.00]*	0.97 [0.89, 1.07]	0.93 [0.87, 1.00]*
Years in the United States	0.99 [0.98, 0.99]**	0.99 [0.98, 0.99]***	1.00 [0.99, 1.02]	1.00 [0.99, 1.02]	0.99 [0.97, 1.00]	1.00 [0.99, 1.01]
Years in community	1.02 [1.01, 1.03]**	1.02 [1.01, 1.03]***	1.02 [1.01, 1.03]**	1.02 [1.01, 1.03]**	1.01 [0.99, 1.02]	0.98 [0.97, 1.00]**
Any musculoskeletal symptoms	2.10 [1.76, 2.52]***	2.68 [2.28, 3.14]***	2.49 [1.87, 3.32]***	3.41 [2.51, 4.63]***	1.18 [0.93, 1.50]	1.00 [0.83, 1.20]

Note. Model adjusted age, gender, education, income, living arrangement, marital status, number of children, years in the United States and years in the community. TCM = traditional Chinese medicine; OR = odds ratio; CI = confidence interval.
*$p < .05$. **$p < .01$. ***$p < .001$.

Table 3. Association Between Four Types of Musculoskeletal Symptoms and TCM Use Among Older Adults.

	OR (95% CI) *p* value					
	Overall TCM use	Herbal use	Acupuncture use	Massage therapy use	Tai-Chi use	Other TCM use
Muscle or joint pain	1.26 [1.05, 1.52]*	1.10 [0.94, 1.29]	1.01 [0.80, 1.28]	1.01 [0.80, 1.28]	1.04 [0.82, 1.32]	1.00 [0.84, 1.20]
Stiffness	1.24 [1.00, 1.53]*	1.70 [1.41, 2.05]***	1.34 [1.04, 1.72]*	1.51 [1.18, 1.93]***	1.18 [0.91, 1.54]	0.78 [0.63, 0.96]*
Back pain	1.78 [1.26, 2.51]**	2.04 [1.53, 2.73]***	1.64 [1.18, 2.28]**	1.89 [1.37, 2.60]***	0.96 [0.65, 1.42]	1.31 [0.99, 1.72]
Redness of joints	4.60 [2.00, 10.59]***	4.81 [2.60, 8.89]***	3.27 [2.09, 5.11]***	3.12 [2.00, 4.88]***	1.13 [0.62, 2.05]	1.47 [0.95, 2.27]

Note. Model adjusted age, gender, education, income, living arrangement, marital status, number of children, years in the United States and years in the community. TCM = traditional Chinese medicine; OR = odds ratio; CI = confidence interval.
*$p < .05$. **$p < .01$. ***$p < .001$.

statistically significant associations found between any types of musculoskeletal symptoms and Tai-Chi use.

Discussion

This study, to our knowledge, is the first to examine the association between musculoskeletal symptoms and TCM use among Chinese older adults in greater Chicago area. This study demonstrates that presence of musculoskeletal symptoms among Chinese older adults in greater Chicago area is significantly associated with higher rate of overall TCM use, especially with massage therapy, herbal, and acupuncture. However, Chinese older adults who have stiffness report significantly less use of other types of TCM. Interestingly, there are no significant associations between musculoskeletal symptoms and Tai-Chi use.

The prevalence of musculoskeletal symptoms among Chinese older adults appears to be strongly associated with herbal use. This choice might be related to the seriousness of musculoskeletal conditions, as individuals may be more likely to seek for herbal products to relieve their pain. Also, the effect of massage therapy was shown to be only significantly positive during the active therapy sessions or immediately after the treatment (Bervoets, Luijsterburg, Alessie, Buijs, & Verhagen, 2015; Hasson, Arnetz, Jelveus, & Edelstam, 2003). After 3 months of the termination of massage therapy, musculoskeletal symptoms were proved to be getting worse, compared with the end of therapy (Hasson et al., 2003). Thus, lack of long-term effect of massage might result in the use of herbal products as the complementary TCM to gain the lasting effect.

The finding of the significant association between musculoskeletal symptoms and acupuncture use is consistent with previous research in this area. A study analyzed the reason for TCM outpatient clinical visits in Taiwan showed that TCM was mostly used in treating musculoskeletal and connective tissue diseases among older adults, and more than half of the patients who had musculoskeletal disease received acupuncture and traumatology manipulative therapies (Yang et al., 2015). Another study also found that more than 80% of acupuncture visits were used by patients with musculoskeletal and neurological problems (Chen, Kung, Chen, & Hwang, 2006). This study also demonstrates that among Chinese older adults who had musculoskeletal symptoms, massage therapy was one popular type of TCM they would like to use. The potential reason for the choices of acupuncture and massage therapy to relieve pain might be low use of U.S. health care system among Chinese older adults in greater Chicago area. According to PINE study, only 76% of Chinese older adults were insured: 59% with Medicare and 57% with Medicaid. Because of the high expenses and linguistic and cultural barriers they face with when using the health care system in the United States, Chinese older adults may be more likely to use practices that could be more cost-efficient and easily accessible. Moreover, as external types of TCM, the choices of acupuncture and massage therapy could eliminate the risk of drug interactions with Western medicine (Cai et al., 2015).

In contrast with a study demonstrated that Tai-Chi user reported higher rates of musculoskeletal symptoms compared with non-Tai-Chi user in the United States (Birdee, Wayne, Davis, Phillips, & Yeh, 2009), this study reveals that presence of musculoskeletal symptoms is not closely associated with the use of Tai-Chi among Chinese older adults in greater Chicago area. Even though a number of studies indicated that the practice of Tai-Chi had beneficial effect on health-related musculoskeletal fitness by improving upper and lower body strength (Manson, Rotondi, Jamnik, Ardern, & Tamim, 2013), neuromuscular function (Qin et al., 2005), and even had effect on delay disability by reducing musculoskeletal impairments (Day et al., 2012), Chinese older adults who have musculoskeletal symptoms are not likely to use Tai-Chi for pain management. There might be multiple reasons. First, lack of physical activity is one of the risk factors for musculoskeletal conditions (Woolf & Pfleger, 2003). Older adults are more likely to have impaired musculoskeletal health if they maintain sedentary lifestyle, compared with those who are physically active. Second, pain and physical impairment caused by severe musculoskeletal disorders does not allow Chinese older adults to perform physical movements. A qualitative study found out that arthritis and related musculoskeletal symptoms were perceived

as barriers to exercise (Wilcox et al., 2006). Rather than active senior without musculoskeletal symptoms, some older adults with mild musculoskeletal symptoms may also practice Tai-Chi to strengthen their physical conditions. Therefore, measuring symptom severity may influence the relationship between musculoskeletal symptoms and Tai-Chi use. Moreover, Tai-Chi is traditionally considered to be a group activity that people gathered together to perform. There might be barriers for immigrant Chinese older adults in the United States that prevent them from performing long-term regular group Tai-Chi exercises. The barriers may include lack of an adequate place for group performance, limited group Tai-Chi activities, and low popularity of Tai-Chi in the United States.

The findings of this study have limitations. First, this study focuses on the association between musculoskeletal symptoms and TCM use. However, the effect of TCM on musculoskeletal symptoms remains unclear. Further studies are required to evaluate the effectiveness of TCM on musculoskeletal symptoms. Second, the present study is based on quantitative data, which restricted the available information. Future qualitative studies are expected to understand the experience of TCM use. Third, participants of this study are residing in greater Chicago Area, thus findings could not be generalized to other Chinese populations in different areas. Fourth, the immigration status and generation status of the participants are not collected in this study, which could also influence western health care utilization and therefore the use of TCM among Chinese older adults.

Despite limitations, this study still has significant implications for the researcher, clinical physicians, and policy makers. This study illuminates the significant association between musculoskeletal symptoms and TCM use among Chinese older adults in greater Chicago area. However, the effect of TCM on musculoskeletal conditions remains implicit. To promote the evidence-based practice, more researches are needed to explore the effectiveness of TCM in treating musculoskeletal symptoms in the future.

This study suggests a great number of U.S. Chinese older adults with musculoskeletal symptoms are using some types of TCM. This finding raises great awareness of the significant role of TCM as the alternative medicine practices among the Chinese population. For health care practitioners, the delivery of musculoskeletal care should be aligned with the treatments that proved to efficiently work for Chinese older adults. The results of this study suggested health care professionals to consider the use of TCM in treating musculoskeletal symptoms among U.S. Chinese older adults.

Conclusion

In sum, this study indicates the high use of TCM by Chinese older adults who suffer from musculoskeletal symptoms, especially the use of massage therapy, herbal, and acupuncture. Future research on the effectiveness of TCM in treating musculoskeletal illness and the relationship between use of TCM and health system in the United States is expected. Clinical physicians should implement TCM to promote culturally adaptive treatment methods for Chinese patients.

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