



Frequencies and prescription patterns of traditional Chinese medicine use among elderly patients in Taiwan: A population-based study



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ABSTRACT

Ethnopharmacological relevance: Traditional Chinese medicine (TCM), one of the most commonly used complementary and alternative medicines, has been receiving increasing attention among elderly patients. However, epidemiological reports and prescription patterns of geriatric TCM users are few. The aim of this study is to use data from a nationwide cohort database to analyze TCM use by the geriatric population in Taiwan from 2005 to 2009.

Materials and methods: TCM outpatient claims data was obtained from the Taiwan National Health Insurance database. Data for elderly patients aged 65 years and older were included in the analysis during the study period. The demographic data, disease distributions, and frequencies and prescription patterns of TCM use by the geriatric population were analyzed.

Results: The geriatric cohort included 97,210 patients, in which 46,883 patients (48%) had used TCM at least once, with a total of 723,478 TCM outpatient visits. Of these, 175,857 visits (24.3%) were prompted by “diseases of the musculoskeletal system and connective tissue”; more than half of patients with such diseases were treated using acupuncture and traumatology manipulative therapies. Overall, among the 552,835 visits during which Chinese herbal products (CHP) were prescribed, Shu-Jing-Huo-Xie-Tang and Dan Shen (*Radix Salvia Miltiorrhizae*) were the most frequently prescribed herbal formula and single herb, respectively, for elderly patients. In addition, Shu-Jing-Huo-Xie-Tang was also the most prescribed herbal formula for the most common disease categories of “diseases of the musculoskeletal system and connective tissue” among TCM elderly patients, followed by Du-Huo-Ji-Sheng-Tang, and Shao-Yao-Gan-Cao-Tang.

Conclusion: This study elucidated the TCM utilization patterns of the geriatric population. However, additional studies are warranted to determine the safety and efficacy of these CHPs for use by elderly patients in further clinical trials.

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1. Introduction

With the increasing aging population and life expectancy, improving the health of elderly people is crucial for reducing age-related morbidities and mortality and improving quality of life. In 1993, the proportion of the elderly population in Taiwan reached 7%, officially an “aging society”, and is expected to exceed 14% in 2018. Only 25 years are required to enter an “aged society” according to the World Health Organization (WHO) (National Development Council, 2014).

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The rates of chronic medical illnesses are high in the geriatric population. Chronic diseases, the leading causes of death among elderly people, cause disability and pain, reduce quality of life, and increase healthcare costs (Centers for Disease Control and Prevention and The Merck Company Foundation, 2007). There is a strong association between the activities of daily living dependence and the presence of geriatric syndromes or aging-related ailments such as frailty, dizziness, falls, incontinence, vision or hearing disorder, and cognitive impairment (Cigolle et al., 2007). However, reduced independence and daily function are not inevitable consequences of aging.

Using complementary and alternative medicine (CAM) has become increasingly widespread over the past years (Kessler et al., 2001; Tindle et al., 2005). Several studies have reported that the main reasons for CAM use among people older than 65 years of age were to

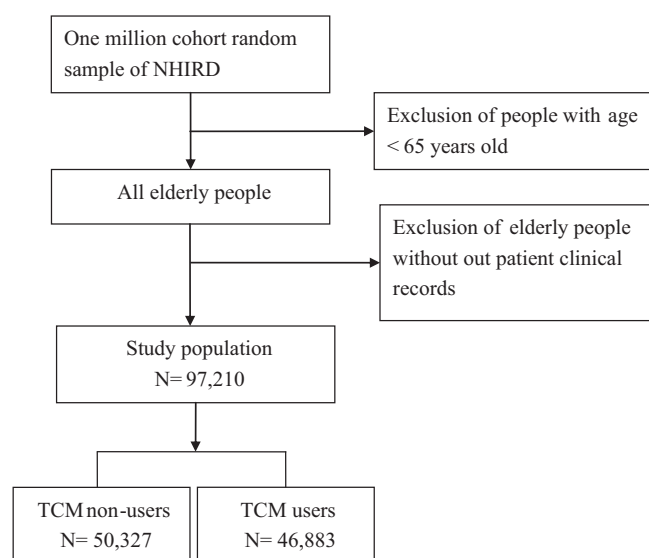


Fig. 1. Flow recruitment chart of subjects from the one million random samples obtained from the National Health Insurance Research Database (NHIRD), 2005 to 2009, in Taiwan.

relieve pain, resolve muscular and psychological problems, maintain physical and mental health, improve quality of life (Williamson et al., 2003), and even control chronic ailments (Eisenberg et al., 1998; Thomas and Coleman, 2004).

Traditional Chinese medicine (TCM), which includes acupuncture, traumatology manipulative therapies, and decoctions, is one of the most commonly used CAMs that has played a crucial role in the health care of Chinese populations (Park et al., 2012). Some previous studies have reported that elderly people may use herbal medicine extensively, primarily because of their cultural backgrounds, in which herb use was common (Wong et al., 2010; Zhang et al., 2007). Other study reported the potential benefits of Chinese herbal medicine for elderly patients with chronic illness such as cardiovascular diseases (CVDs) (Luo et al., 2013).

In Taiwan, TCM is frequently used (Chen et al., 2007). Depending on patient conditions, TCM physicians widely prescribe Chinese herbal products (CHP), a modern form of convenient and high-quality decoctions, according to TCM theory. Certain studies have documented the efficacy of TCM in a variety of populations and when treating numerous diseases (Efferth et al., 2007; Yuan and Lin, 2000). However, epidemiologic investigations about geriatric TCM users in large-scale population studies are few. The factors that influence TCM use among the geriatric population in Taiwan remain uncharacterized. Because healthcare providers offering CHPs, acupuncture, and traumatology manipulative therapies have been regularly reimbursed under the National Health Insurance (NHI) program since 1995 in Taiwan, the claims database is an optimal platform for understanding TCM utilization.

We used data from the National Health Insurance Research Database (NHIRD) to investigate the medical conditions and demographic factors associated with TCM use and to analyze the frequencies and prescription patterns of TCM among the geriatric population in Taiwan from 2005 to 2009. By referencing this study, clinical practitioners can learn more about the demands and preferences of elderly TCM users and provide more reliable information about TCM use.

2. Materials and methods

2.1. Data source

Expenditures associated with Western and Chinese medicines have been reimbursed under the NHI program, which was executed in

1995. Approximately 99% of the population in Taiwan was included in the scheme by the end of 2010 (Insurance BoNH, 2010). The NHIRD website offers electronic claims database, which includes patient medical records and information such as patient age, date of birth, sex, date of encounters, medical care facilities and specialties, management and treatment, prescribed drugs, transferred identification number, and three major diagnoses based on the International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) codes. To protect personal privacy, the data regarding patient identity and institutions visited are cryptographically scrambled. Thus, the NHIRD is an optimal platform for surveying the utilization patterns of TCM, prescribed by licensed TCM physicians, among the geriatric population in Taiwan.

We analyzed a sample of one million randomly selected participants from the 22 million beneficiaries in the NHI program from 2005 to 2009. The sampled cohort in this study was representative of all beneficiaries, including people aged 65 years and older.

2.2. Study subjects

Most developed countries have accepted the chronological age of 65 years as the beginning of older age, according to a WHO statement. Therefore, people aged 65 years and older from the random sampling cohort were included as the study subjects. In the elderly population, patients who had at least one TCM outpatient clinical visit from 2005 to 2009 were defined as TCM users, whereas those with no TCM outpatient records were defined as non-TCM users (Fig. 1). All geriatric population-related medical records from during the study period were analyzed. We considered the first diagnosis coded according to the ICD-9-CM codes to be the major diagnosis, as described in the outpatient department visit records, and then grouped the diagnoses into a series of broader categories. In addition, we obtained the files containing the prescription records of CHPs related to patient outpatient visits to evaluate the frequencies and prescription patterns among this population.

2.3. Traditional Chinese medicine

TCM, comprising CHPs, acupuncture, and traumatology manipulative therapies, has been most widely adopted by patients in Taiwan and has developed over the past millennia. Prescriptions prescribed by TCM physicians may comprise one or more herbs (formulae) depending on the various symptoms and signs of patients, evaluated on the basis of the TCM theory. Chinese herbal formulae or drugs are manufactured into fine granules or powders that can be mixed easily in a single prescription. The Department of Chinese Medicine and Pharmacy website provides information regarding reimbursed CHPs that includes the name of each CHP, the proportion of each component, the period and date of approval as a drug, and the manufacturer's name and code.

2.4. Statistical analysis

Drug registration numbers from the Department of Chinese Medicine and Pharmacy website were linked to the outpatient visit records of the study cohort. The frequency, percentage, average daily dose (g), and average duration (days) of herbal formulae or single herbs use were analyzed and calculated. Data analysis was performed on descriptive statistics that included the prescription rates of TCM users stratified using patient demographic features and disease indications for the prescription of TCM. The main indications were categorized on the basis of the ICD-9-CM codes. The database software, SAS version 9.2

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