Research Paper

Demographic and medication characteristics of traditional Chinese medicine users among dementia patients in Taiwan: A nationwide database study

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ABSTRACT

Ethnopharmacological relevance: Few studies have reported on the utilization of traditional Chinese medicine (TCM) among dementia patients. The aim of the present study is to analyze factors associated with TCM users in the dementia populations and to investigate the medical conditions related to TCM visits.
Materials and methods: A total of 18,141 dementia patients were screened from the one million sample of the National Health Insurance Research Database. The dementia patients were then divided into TCM users and non-TCM users according to their medical records between 1997 and 2008. Demographic characteristics included gender, age, insured amount, and geographic location and medical conditions including comorbidity diseases, behavioral and psychological symptoms, and anti-dementia medication were also investigated. Their tendency of TCM usage was investigated using a multivariate logistic regression.
Results: In Taiwan, 43.3% dementia patients had sought TCM treatments. The inclination of TCM usage was inversely proportional to age; the younger and early-onset dementia (age less than 55 years) patients constituted the high usage group. Female, living in central Taiwan, and higher insured amount were also associated with higher tendency of TCM use. Multilevel Poisson regression analysis showed that the Adjust odds ratios (OR) of TCM use were 1.80 (95% CI=1.68–1.94), 2.52 (95% CI=2.30–2.76), and 3.41 (95% CI=3.01–3.86) for those with one, two, three or more behavioral and psychological symptoms of dementia (BPSD), respectively compared with dementia sufferers without BPSD. In addition, polypharmacy led to higher utilization of TCM (one type: Adjust OR=1.41, 95% CI=1.28–1.56, two types: Adjust OR=1.97, 95% CI=1.63–2.00; three or more types: Adjust OR=2.95, 95% CI=2.27–2.78). More than 70% TCM visits were treated with Chinese herbal remedies, while others used acupuncture and manipulative therapies. Qi-Ju-Di-Huang-Wan (9.7%) was the most frequently prescribed formula, followed by Jia-Wei-Xiao-Yao-San and Ban-Xia-Bai-Zhu-Tian-Ma-Tang.
Conclusion: More than 40% of the dementia patients in Taiwan used TCM. Young-onset dementia, higher number of BPSD, multiple chronic diseases, and polypharmacy were independent predictors for dementia patients seeking TCM medical advice. On the basis of the current findings, additional clinical or epidemiologic study on the prescription patterns of TCM in dementia treatment, or the herb-drug interaction and safety issue can be conducted.

1. Introduction

Dementia, characterized by a serious loss of global cognitive ability, is a key challenge among the elderly population around the world (Querfurth and LaFerla, 2011). A systematic review of the global prevalence indicates that 35.6 million people lived with dementia worldwide in 2010, and the number was expected to double almost every 20 years (Prince et al., 2013). Although acetylcholinesterase inhibitors (rivastigmine, galantamine and donepezil) and N-methyl-D-aspartate receptor antagonists (memantine) (Birks, 2006; McShane et al., 2008) show efficiency in maintaining global function, none of them can cease the degeneration progression (Raina et al., 2008). Therefore, complementary and alternative

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medicine has become increasingly popular for dementia and related behavioral and psychological symptoms (Dhikav and Anand, 2012).
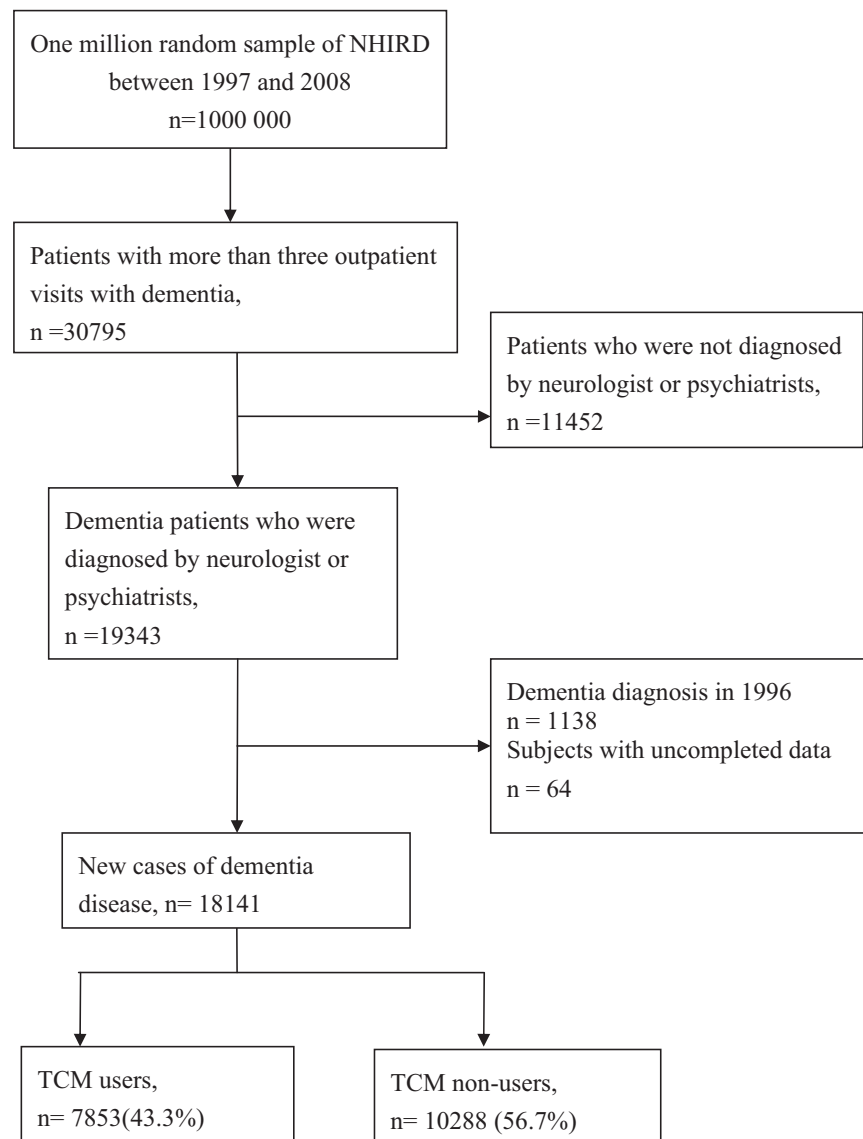
Traditional Chinese medicine (TCM), the most common complementary and alternative medicine in Taiwan, has been widely used over one hundred years. Acupuncture, traumatology, manipulative therapies and Chinese herbal products were the most commonly used treatment for TCM practitioners in Taiwan (Hsieh et al., 2008).

The National Health Insurance (NHI) system in Taiwan covers more than 97% of the Taiwanese population and permits patients to freely choose TCM, modern medicine or combined, thus allowing unbiased economic choices for dementia treatments. Medical records of all clinics and hospitals are stored in the National Health Insurance Research Database (NHIRD), and researchers can use the nationwide medical data upon approval of the Institutional Review Board. Unlike previous cross-sectional research on the use of complementary and alternative medicine (Teut et al., 2013), the NHIRD can measure the rate of newly diagnosed dementia cases and estimate associations with potential determinants of TCM use among the dementia population (Lee et al., 2013). Past studies using the NHIRD have reported that Chinese herbal remedies are the most

common type of TCM treatment. Furthermore, female patients or those with higher number of chronic illnesses are more likely to be TCM users among the general population in Taiwan (Hsieh et al., 2008). In addition, early Chinese immigrants introduced TCM first into central and southern Taiwan, patients living in central and southern Taiwan were more likely to use TCM compared with those living in northern Taiwan.

In recent years, some TCM herbs such as *Ginkgo biloba*, *Poria cocos*, *Radix polygalae*, and *Radix rehmanniae* have demonstrated potential benefits to dementia intervention (Lin et al., 2012; Brondino et al., 2013). Moreover, other TCM herbs are being used for Alzheimer's disease as a new therapy to improve memory and cognitive function (Liu et al., 2014). However, a large-scale epidemiologic investigation regarding TCM use among dementia patients is still lacking, and the factors associated with the use of TCM for dementia also remain unclear.

The aim of the present study is to analyze factors associated with TCM use in dementia populations and to investigate demographic or medical conditions favorable for TCM visits. From this study, neurologists could obtain more reliable information about the demands and preferences of dementia patients. More attention

Fig. 1. Flowchart of the patient enrollment process of this study from National Health Insurance Research Database (NHIRD). Abbreviation: TCM, Traditional Chinese Medicine.