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Demographic and medication characteristics of traditional Chinese medicine users among colorectal cancer survivors: A nationwide database study in Taiwan

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ABSTRACT

Chinese herbal product (CHP) is the major type of traditional Chinese medicine (TCM) and widely used to relieve the symptom of colorectal cancer. The aim of the study was to analyze the utilization of CHP for treating patients with colorectal cancer in Taiwan. The usage of CHP, frequency of services, and prescription pattern for colorectal cancer were analyzed from a randomly sampled cohort of 1 million beneficiaries from the National Health Insurance Research Database. The odds ratios for utilization of CHP were estimated with logistic regression model. 2846 patients were newly diagnosed as colorectal cancer during 1998–2008 in the million cohort in Taiwan. 42.7% (n = 1214) of them used CHP. Colorectal cancer was the most common diagnosis coded by TCM doctor, followed by symptoms, signs, and ill-defined conditions. Costusroot and Amomum Six Gentlemen Decoction (香砂六君子湯 *xiāng shā liù jūn zǐ tāng*) was the most frequently prescribed formula for treating colorectal cancer. Among the top 10 most frequently prescribed CHP for treating colorectal cancer, six containing Ginseng Radix (人參, *Panax ginseng*) and two containing Astragali Radix (黃耆, *Astragalus membranaceus*), which are reported to have potential beneficial synergistic effects on colorectal cancer cells. CHP containing Ginseng Radix or Astragali Radix are the most frequently prescribed for colorectal cancer and their effects should be taken into account by healthcare providers.

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1. Introduction

Colorectal cancer (CRC) remains one of the most prevalent cancers and a leading cause of cancer related death world-wide.^{1–3} Despite the lack of solid evidence supporting their therapeutic benefits, the reported incidences of use of complementary and alternative medicines (CAM) from the time of initial diagnosis of colorectal cancer until his or her death (colorectal cancer survivors)

range from 70 to 86%.⁴ Attempting to improve one's physical and emotional health,^{5–7} the desire to exert a sense of personal control over one's illness,⁸ dissatisfaction with the medical care system or health providers,⁹ and doubts concerning the effectiveness of conventional treatment may be the reasons why patients use a wide range of CAM including herbs, vitamins, homeopathic remedies, and CHP.^{5,10} The expectations of CAM use varies among individuals. Some just hope to strengthen their immune system, some want to decrease the treatment-associated toxicity, and some want to alleviate the CRC-derived symptoms.^{11–13} However, there is no compelling evidence supporting the effectiveness of CAM use in CRC survivors. In view of such and without further knowledge on how effective CAM is, it is not easy for oncologists or CAM practitioners to provide an appropriate recommendation that can meet the expectations of CRC survivors.

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TCM, a long and widely used form of medical care in ethnic Chinese communities and nearby regions, which includes acupuncture, traumatology manipulative therapies and Chinese herbal products, has been growing in popularity and has offered an important alternative or complement to health care in many countries. Previous studies have disclosed that the potential beneficial anticancer effects of the usage of Ginseng Radix¹⁴ or Astragali Radix¹⁵ among CRC survivors. Although a previous randomized clinical trial of a CHP indicated that PHY 906 decrease in CRC survivors' nausea and diarrhea effectively,¹⁶ the utilization of individual CHP has rarely been reported. In Taiwan, CHP have been an important part of health care for hundreds of years and over ten thousands licensed CHPs are reimbursed under the current National Health Insurance (NHI) system.

Taiwan launched a single-payer National Health Insurance Program on March 1, 1995. As of 2007, 22.60 million of 22.96 million Taiwan populations were enrolled in this program. The database of this program contains registration files, and original claim data for reimbursement. National Health Insurance Research Database (NHIRD) derived from this system by the Bureau of National Health Insurance, Taiwan (BNHI) and maintained by the National Health Research Institutes, Taiwan (NHRI), is provided to scientists in Taiwan for research purposes. Accordingly, the claims database provides a platform for understanding the utilization of CHP prescribed by licensed TCM doctors. The aim of our study is to analyze

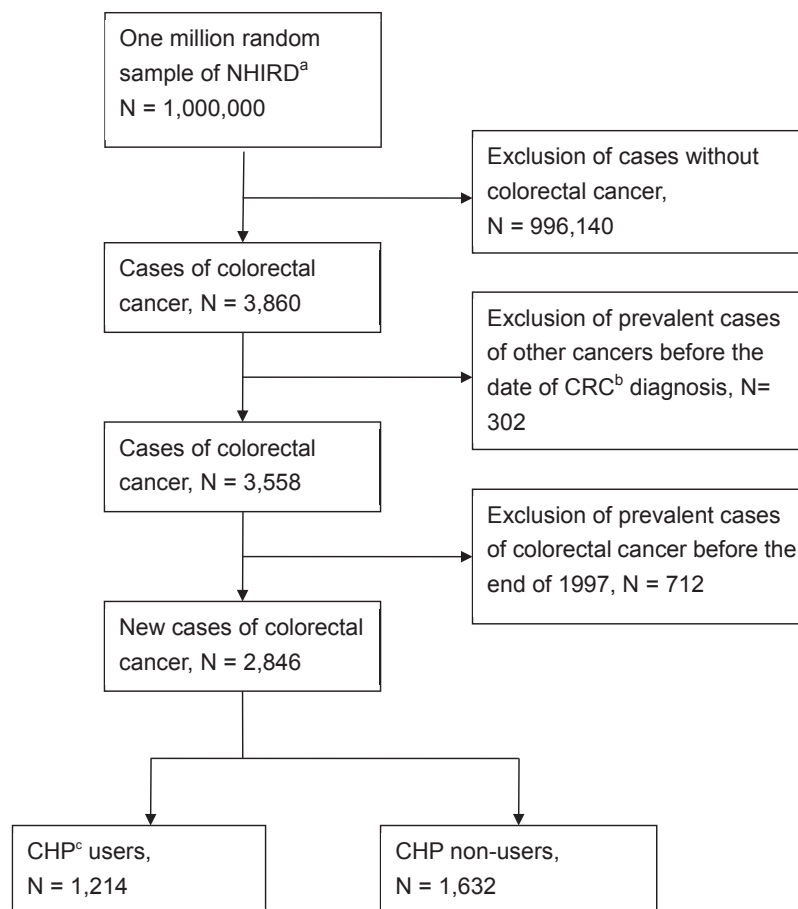
a random sample of this comprehensive database and to determine the CHP utilization patterns for CRC survivors in Taiwan. Results of this study may provide valuable information for physicians, enabling them to respond to patients' use of CHP in an informed way and strengthening the patient-physician relationship in CRC care.

2. Materials and methods

2.1. Data resource

Our study protocols were approved by the Institutional Review Board of the Ministry of Health and Welfare (MOHW), Taiwan. Our population-based study retrospectively analyzed the reimbursement records of 1 million NHI beneficiaries in the NHIRD that had been previously selected at random from the 22 million beneficiaries of the NHI to determine the prevalence of prescribed CHP in CRC survivors between January 1, 1998, and December 31, 2008, in Taiwan. The electronic records of the NHIRD use beneficiary identification numbers that are encrypted and maintained by NHRI of Taiwan.^{17,18}

The NHIRD records contain demographic information, including age and sex, and clinical data, including all records of clinical visits and hospitalizations and all information regarding prescribed drugs and dosages, including CHPs, and three major diagnoses coded in



^a, NHIRD: National Health Insurance Research Database; ^b, CRC: colorectal cancer; ^c, CHP: Chinese herbal products.

Fig. 1. Flowchart of recruitment of subjects from the one million random sample of the National Health Insurance Research Database from 1998 to 2008 in Taiwan.

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