

PERSPECTIVES ON TRADITIONAL CHINESE MEDICINE IN THE TAIWANESE
HEALTH INSURANCE SYSTEM

A Thesis
by
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Abstract

PERSPECTIVES ON TRADITIONAL CHINESE MEDICINE IN THE TAIWANESE HEALTH INSURANCE SYSTEM

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Approximately ninety-nine percent of Taiwanese citizens are enrolled under universal health insurance that provides comprehensive health coverage including some traditional Chinese medicine therapies. Through in-person interviews and surveys in Taiwan, our study reports on the perceived satisfaction with choice and reimbursement of traditional Chinese medicine covered by the universal health insurance system. Understanding Taiwan's experiences with incorporating traditional Chinese medicine into the universal health insurance system may provide lessons and implications for other universal health insurance systems or private pay insurance companies that are considering coverage of traditional Chinese medicine and alternative medicines.

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Foreword

The research detailed in this thesis will be submitted to the Southern Management Association 2013 annual meeting. This thesis has been prepared according to the guidelines of the conference.

PERSPECTIVES ON TRADITIONAL CHINESE MEDICINE IN THE TAIWANESE HEALTH INSURANCE SYSTEM

INTRODUCTION

Taiwan, an island located in eastern Asia off the southeastern coast of China, has experienced rapid economic growth and development over the past sixty years. By the beginning of the 21st century, Taiwan had developed a free enterprise economy. Taiwan ranks thirteenth among the most competitive advanced economies in the world (Schwab, 2012). Economic prosperity has led to transformation of social and health programs, including significant reform of the national health care system. Taiwan's current population is estimated at more than twenty-three million with the life expectancy at birth now 78.48 years (Central Intelligence Agency, 2012). Approximately 99 percent of Taiwanese citizens are enrolled under the National Health Insurance (henceforth, NHI) system (Bureau of National Health Insurance, 2012).

Taiwan introduced and implemented the NHI system in 1995 in order to provide comprehensive health coverage for Taiwanese citizens. At that time the NHI system was designed to consolidate several separate insurance arrangements that covered only a percentage of the total population with the goal to provide health care coverage for all citizens and improve efficiency of overall health care delivery (Wu, Majeed & Kuo, 2010). In instituting the universal insurance system, the Taiwanese government studied the health systems of other advanced countries and designed a single-payer system in which individuals maintain free choice of providers and hospitals (Cheng, 2003). The NHI system provides

compulsory comprehensive benefit coverage including preventative and medical services, inpatient and outpatient services, prescription drugs, dental services and traditional medicine therapies. The NHI has allocated resources and expenditures to cover specified traditional Chinese medicine (henceforth, TCM) treatments as a category of medical services under the universal health system (Shih, Lew-Ting, Chang & Kuo, 2008).

Having accumulated almost two decades of experiences with the universal healthcare system, Taiwan provides a distinctive setting and reference point to better understand TCM in the context of the universal healthcare system. The primary focus of this paper is to learn more about the perceived satisfaction with the coverage of TCM as a component of the universal healthcare system in Taiwan. We also report on some of the perceived benefits, challenges and lessons for incorporating TCM coverage within the universal healthcare system. With the main focus of our paper being on perceptions of TCM within the healthcare system in Taiwan, we first provide a brief review of Taiwan's NHI system followed by a discussion of the general characteristics of TCM as covered by the NHI system. We then present the research questions for the current study, methodology and results. We conclude with discussion of the results, limitations of the study and suggestions for future research.

Our study extends past research on understanding TCM within the Taiwanese healthcare system. We examine the perceptions of satisfaction with TCM in the healthcare system by using a combination of qualitative and quantitative data. Lessons about the perceptions of Taiwan's implementation of TCM coverage in its national health system have implications for the Taiwanese national health system and other universal delivery systems that may be considering coverage of traditional or alternative treatments. For example, the

interest in TCM, as well as other complementary and alternative medicines, is growing in many western countries (e.g., Chen, et al., 2007). Ni, Simile and Hardy (2002) reported an estimated 28.9 percent of adults in the United States used at least one alternative treatment in the year of their study. Nahin, Barnes, Stussman and Bloom (2009) reported on statistics from the 2007 National Health Interview Survey (NHIS) showing approximately 38 percent of adults in the United States were using complementary and alternative medicine (CAM). In addition, adults in the United States spent \$33.9 billion out-of-pocket on visits to complementary and alternative medicine (CAM) practitioners and purchases of CAM products, classes and materials. The NHIS reported approximately 354 million visits to CAM practitioners in the 2007 survey.

Elsewhere, the World Health Organization has long promoted the integration of traditional and alternative medicines with western medicine therapies into the overall health delivery systems (Cheung, 2011; Chi, 1994). According to Cheung (2011), as much as 60 to 75 percent of the populations of Taiwan, Japan, South Korea and Singapore have been reported to use traditional medicine at least once a year. Thus, as countries and economies contemplate alternative coverage options for their medical delivery systems, Taiwan's experiences with incorporating TCM into the national healthcare system may provide some useful lessons for universal insurance systems as well as private-pay insurance arrangements that are considering coverage of some traditional Chinese therapies.

THEORY DEVELOPMENT

Overview of the Taiwanese Health Insurance System

The Taiwanese government adopted the universal NHI system in March 1995. Before NHI was implemented, approximately 57 percent of the population was covered

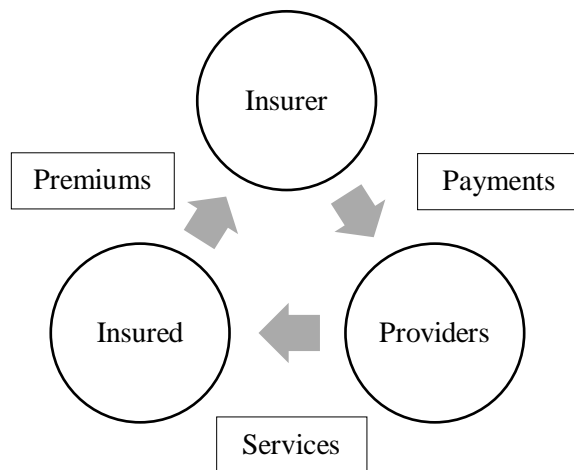
through various public insurance programs such as labor insurance, government employee insurance, farmers insurance and low-income household insurance (Cheng, 2003; Lu & Chiang, 2011; Lu & Hsiao, 2003). The NHI was established to consolidate insurance programs into a single system, increase the breadth of coverage to ensure that individuals receive adequate care and provide efficiency in expenditures (Wu et al., 2010).

The Taiwanese NHI system has been developed with a number of key features. The NHI is administered by the Taiwanese government through the Department of Health. The universal coverage rate is about 99 percent of the population (Bureau of National Health Insurance, 2012) and is compulsory for citizens and residents. The single payer system is administered by the government and providers contract with NHI for reimbursement of services that are provided. There is a premium and co-payment for the coverage, adjusted with need-based subsidies. Lu and Hsiao (2003) have reported on several benefits of the NHI system and found that the single-payer system provides ease of access. It has allowed Taiwan to manage health care expenditures and cover the previously uninsured. In addition, the NHI enables equal access to healthcare services and provides financial risk protection.

In another overview of the Taiwanese healthcare system, Wu, Majeed and Kuo (2010) characterized the national health care system as providing good accessibility for citizens, comprehensive population coverage and low costs resulting from the single insurer system. The program provides compulsory comprehensive benefit coverage including preventative and medical services, inpatient and outpatient services, prescription drugs, dental services and TCM therapies. Public satisfaction ratings have shown a high level of satisfaction by the public with 80.4 percent of the population overall satisfied with NHI in 2011 (Bureau of National Health Insurance, 2012).

The Taiwanese single-payer insurance framework integrates the relationships among the insurer, providers and the insured as represented in Figure 1. The NHI system is financed through contributions from employers and employees that may vary for different income groups and occupations. Every Taiwanese citizen with official residency and all foreign nationals living in Taiwan with an Alien Resident Certificate (ARC) are required to enroll in the NHI program. NHI provides lifetime coverage, except for persons who lose insurance eligibility (such as persons who give up Taiwan citizenship, move abroad or let their ARC expire.) Covered individuals have an NHI issued IC card (integrated circuit or smart card) that is presented for medical services. Each NHI IC card provides electronic medical information about the individual's identity, medical history and health records. Whenever the patient sees a provider for services, the provider accesses the information stored on the card for current details about the patient's medications and treatments. Providers use the electronic system to bill the NHI for claims related to the services provided, and reimbursement is sent electronically to the providers from the NHI (Bureau of National Health Insurance, 2012).

Figure 1. Description of the Taiwan Health Insurance Framework



Source: Adopted from Bureau of National Health Insurance, *National Health Insurance Statistical Report*, 2012. Retrieved from <http://www.nhi.gov.tw/English/index.aspx> on March 12, 2013.

Chen and Cheng (2010) in one study recognized the importance of considering patient perceptions in evaluating the single-payer system in Taiwan. The NHI does not have a referral mechanism or gatekeeper system; thus, patients can pursue inpatient or outpatient care based on their individual preferences. In another study, Cheng, Yang and Chiang (2003) examined patient satisfaction with hospital services in Taiwan and found that interpersonal skills are influential on patient satisfaction and are more influential than clinical competence in some disease categories. Additionally, personal characteristics such as age, gender, education, and family recommendations have been examined for association with patient satisfaction in the NHI system (e.g., Cheng et al., 2003; Young, Meterko & Desai, 2000).

Characteristics of Traditional Chinese Medicine

TCM has been regarded as an important therapeutic system for centuries in East Asia and mainland China (Jingfeng, 1988). Today it is common in Chinese populations

throughout the East Asia region for TCM to be practiced alongside western medicine (Chi, Lee, Lai, Chen, Chang & Chen, 1996). The World Health Organization (WHO) has promoted the integration of traditional medicine with western medicine into an overall delivery system (Cheung, 2011; Chi, 1994). One's health in TCM is considered as harmony between the forces of yin and yang with regard to the body and its environment, while illness is considered an imbalance of the forces. Qi is the source of life being defined as the circulation of energy in the body. TCM practitioners focus on the interruption of qi as the basis for diagnosis, treatment and prevention of illnesses (Chen, 2001) and use a system of holistic interpretation to evaluate the patient's condition. The TCM practitioner will examine the patient's skin, complexion, and tongue condition, listen to the voice and breathing, question the patient and check the patient's wrist pulse as part of the health assessment of the body's equilibrium. As explained by Cheung (2011: S82), "the ultimate goal of treatment is to restore the qi (energy) and yin-yang (balance) of this complex system."

TCM has been considered a vital component of the Taiwanese national health system from the inception of the universal health care system. For example, Chi (1994) described a national study in Taiwan that was conducted at the time the universal health care system was being formulated. The study showed that 86 percent of respondents supported the coverage of TCM in the new NHI system that was to be implemented in 1995.

Several researchers (e.g., Chi, 1994; Lu & Chiang, 2011; Wu et al., 2010) have studied the evolution of TCM in Taiwan's health care delivery from the historical perspective. In one overview of the health care system, Lu and Chiang (2011) noted that before the 20th century TCM was common in health care delivery, although there was no formal education or licensure. Chi (1994) described that before western influence in the

1860s TCM was dominant in Taiwan. Furthermore, Lu and Chiang (2011) described the diminishing role of traditional medicines during the first half of the 20th century as the acceptance and training of western medicine spread. By the early 1950s, the practice of TCM was modernized as part of the medical education system or licensure was reinstated.

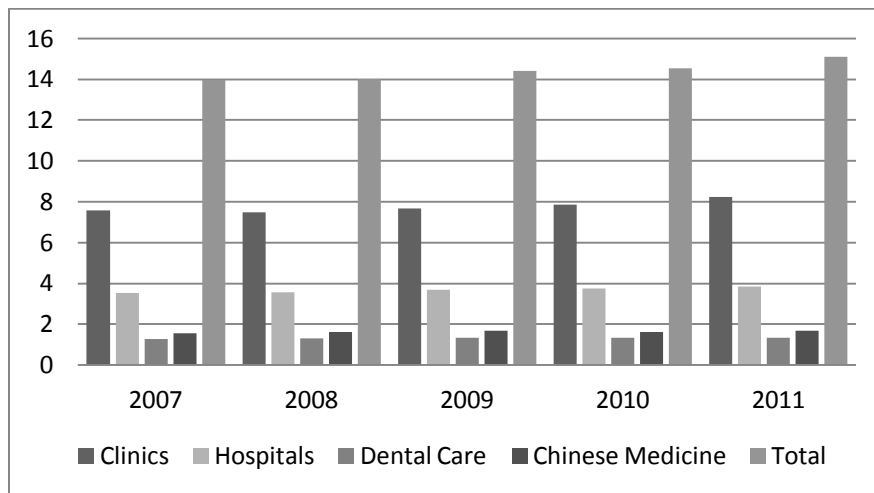
Based on the medical traditions and values in Taiwan, the NHI system was designed to cover both TCM and western medicine (Shih et al., 2008). As the government formulated health care policies in the modern era, TCM became a component of health care covered under the national health care system. From the delivery perspective, the patient is free to choose the TCM provider and licensed TCM providers qualify for reimbursement by NHI based on the provider's participation in the NHI system (Shih, Lin, Liao & Su, 2009). While TCM is covered by the NHI system, it represents a relatively small component of the expenditures and resources allocated by the NHI. TCM is regarded to a certain extent as complementary to western medicine.

In general, the NHI coverage includes TCM treatments that are derived from traditional medicinal herbs, acupuncture, moxibustion and traumatology manipulative therapies (Shih et al., 2008). The NHI has described the diagnostic classification of patients seen by Chinese medicine practitioners. Some common health conditions for which patients see Chinese medicine providers include diseases of the respiratory system, diseases of the musculoskeletal system and connective tissue, injuries and poisoning, and diseases of the digestive system.

Attitudes about TCM utilization in Taiwan have been shown to be influenced by cultural values (Chen, 2001). Some studies (e.g., Shih et al., 2008) have examined the determinants and frequency of use of non-covered and covered complementary and

alternative medicines in national representative samples and found that there is a demand for non-covered therapies beyond those covered by national insurance. Given the purpose of the current study to look at TCM in the NHI system, we focus on the TCM therapies and providers that are a part of the coverage by the NHI system. TCM represents a relatively small allocation of the overall reimbursements by the NHI. Nevertheless, as shown in Figure 2, TCM outpatient visits have represented a consistently small component of the total outpatient visits during the period 2007-2011 (Bureau of National Health Insurance, 2012).

Figure 2. Outpatient Visits in Taiwan per Person per Year from 2007-2011



Source: Bureau of National Health Insurance. (2012). National Health Insurance Statistical Report, Retrieved March 12, 2013 from <http://www.nhi.gov.tw/English/index.aspx>.

In one study of outpatient reimbursement claims, the researchers (Chen et al., 2007) examined the utilization of TCM therapies and found that TCM was utilized by more than 60 percent of the subjects during a six-year interval to treat diseases and problems of major human organ systems. The most common diseases that were treated with TCM included problems and diseases of human organ systems recognized by western medicine, including TCM visits for the respiratory system, musculoskeletal system, digestive, genitourinary system, and the symptoms and signs for ill-defined conditions (Chen et al., 2007). The most

common treatment modalities were the use of Chinese herbal remedies, acupuncture and traumatology manipulative therapies. In the same study, the researchers found that most TCM treatments were completed in private TCM outpatient clinics.

Other recent studies of the NHI system have examined the utilization of TCM for treatment of specific diagnoses. For example, Liao, Lin, Li and Lin (2012) examined the use of TCM treatments among patients with liver cancer, a leading cause of deaths in Taiwan. In another study (Chang, Huang, Chou, Lee, Kao & Huang, 2008) data from the NHI claims records found that herbal medications are the major component of TCM for more than two-thirds of ambulatory visits. According to a study conducted by Shih, Lin, Liao and Su (2009), children with higher socioeconomic status utilized TCM more often compared to children from low socioeconomic families. Other researchers (Chen et al., 2007) have shown that as many as 60 percent of beneficiaries covered by the NHI system had used TCM at least once in a given year. Other researchers (Shih et al., 2009) noted that educational level was a determinant of utilizing TCM services with people having thirteen or more years of education being more likely to visit the TCM practitioners. As other large scale studies are conducted utilizing data and medical records from the NHI system, information continues to be gained about the prevalence of TCM utilization among the population for specific disease categories.

Recognizing that interest in alternative and complementary medicines is growing among patients in other countries and economies (Winnick, 2007), researchers (e.g., Chung, Hillier, Chun, Wong, Yeoh & Griffiths, 2011) have examined the attitudes and behavior of western medicine practitioners towards TCM. The World Health Organization has underscored the importance of attention to involving western practitioners in understanding

TCM and other alternative medicines. One report suggested that the communication between TCM and western providers should be improved and training should be developed to understand the relationship between western medicine practitioners and traditional medicine practitioners (World Health Organization, 2008).

Research Questions

Drawing on prior research about TCM in the Taiwanese health system and recognizing the growing global interest in complementary and alternative medicines, we focused attention in this study on learning more about satisfaction with TCM in the Taiwanese NHI system. Taiwan's NHI system provides a setting for better understanding TCM within the context of universal health insurance coverage. In our study, we are interested in examining the perspectives on the TCM component of covered medical services in order to better understand the relationship between TCM and satisfaction with the NHI system. We study dimensions of satisfaction with regard to quality, access and cost of TCM as relates to satisfaction with the NHI system.

METHODS

Sample and Data Sources

Given the nature of our research questions, we utilized both quantitative and qualitative approaches (e.g., deMarrais & Lapan, 2004; Neuman, 2011). Our first objective was to conduct in-depth conversations with healthcare professionals in Taiwan to understand their perspectives on TCM in the NHI system and to learn their suggestions for other health systems that may be considering the incorporation of TCM coverage in a universal health system. Our second objective was to gather information using a survey administered to respondents in Taiwan who had utilized TCM in the national healthcare system. This

information provided insight into the perceived satisfaction with TCM as covered by the NHI system.

The participants for the interviews were healthcare professionals having experiences with TCM and the NHI system in Taiwan. The participants were identified via purposive sampling in the metropolitan area in Taipei, Taiwan. Utilizing an initial contact with experience in TCM in the NHI system, participation was sought from other professionals known to have considerable experiences with TCM in the NHI system. In this respect, the participants in the interviews are similar. Otherwise, they differ considerably in terms of background and experiences. Individuals were introduced to our study by e-mail correspondence and followed by direct contact in Taiwan. Utilizing personal interviews, our objective was to have in-depth discussions on the topic of TCM in the NHI system with the professionals who were knowledgeable about the subject. In addition, a more detailed survey was developed along with the interview questionnaire to further collect quantifiable opinions about TCM in the NHI system.

Data Collection and Procedures

Interviews. The interviews were semi-structured with predetermined questions and were supplemented with questions asked as the need arose during the interview. According to sources (e.g., deMarrais & Lapan, 2004), it is appropriate to maintain this flexibility in order to explore the insight provided in each individual interview. The consent form is shown in Appendix A and the interview questionnaire is shown in Appendix B in English. Consistent with procedures followed by other researchers (e.g., Brislin, 1970; Yang, Chen, Choi & Zou, 2000), the instruments were translated from English to Mandarin by bilingual speakers, back-translated into English and checked for equivalent meaning. The consent

form and interview questions were translated from English to Mandarin by one researcher who is fluent in English and Mandarin with the assistance of two other individuals who are fluent in English and Mandarin.

Nine semi-structured interviews were conducted in Taipei, Taiwan during the period December 27, 2012 through January 7, 2013. Practical restrictions on sample size are commonly associated with interviewing and, at the same time, the use of more than one interview is important for validity (Neuman, 2011). Several precautions were implemented in the data collection. The researcher kept detailed field notes and targeted a one-day turnaround on the summarization of the field notes from the interviews. Comments were noted in detail by the researcher during or immediately after each interview. Preliminary to each interview, the interviewer conveyed the purpose of the research, described the use of the data and addressed confidentiality. Each interviewee was identified by a pseudonym which corresponds to the identification in our field notes. Intentionally, different healthcare professional backgrounds are represented in the study. When reporting results from the interviews, the names of the participants are not disclosed.

Interviews averaged approximately 60 minutes and were conducted in Mandarin by the researcher who is fluent in English and Mandarin. The researcher was accompanied for the interview by another bilingual speaker. Approximately one week prior to the interview, each individual was given a copy of the interview questionnaire with the general questions in Mandarin. Several interviewees made notes and wrote down general responses on the questionnaire prior to the interview. These copies were collected at the end of the interview and referenced by the researchers for accuracy. During the personal interviews, participants were asked to respond and elaborate further if applicable. Answering the open-ended

questions (e.g., Neuman, 2011), the participants could respond in their own words as the discussion proceeded. Immediately after the interview, responses were summarized and translated into English by the researchers. As needed, follow-up contacts were made with respondents by e-mail or phone to ensure completeness of the data or clarify responses.

Data from the interviews were content analyzed in accordance with qualitative research procedures using an iterative process (e.g., Strauss & Corbin, 1998). Interviewers took notes during the interview and summarized each interview immediately after the interview was conducted. The responses were back-translated to English and checked for accuracy by bilingual speakers. The process continued to address conceptual discrepancies and to reach agreement between the translators. Each researcher read the responses to identify themes and patterns. The researchers independently cross-analyzed the content of the responses and identified the themes and patterns across the responses. The researchers worked together to summarize the findings as well as compare and contrast the findings.

Survey Questionnaire. We developed and administered a survey with questions derived from the literature review and background research to understand the perceptions about TCM in the NHI system. The survey instrument, shown in Appendix C, was translated from English to Mandarin by the researcher who is bilingual in English and Mandarin and checked for accuracy by two other bilingual speakers. The survey was administered in Mandarin and responses were back-translated to English by the researcher and checked for accuracy by two bilingual speakers. A total of 45 surveys were administered and collected, and the survey took approximately fifteen minutes for each respondent to complete.

RESULTS

Interview Results

We interviewed nine healthcare professionals. Of the nine interviews conducted, six were male and three were female. Three respondents were 26-45 years of age, two were 46-55 years of age, three were 66 years of age or older and one respondent did not provide age. In terms of experience, one respondent reported less than five years of experience, two reported six to ten years of experience, one reported eleven to fifteen years of experience, one had between sixteen and twenty years of experience, and four had twenty-one or more years of experience with TCM in the NHI system. Participants in the interviews included three private health insurance professionals, three western medicine practitioners with professional experience including practice within a western hospital, two traditional Chinese medicine practitioners and one professional with a pharmacy background. With respect to highest level of education, two reported some college, four reported the bachelors education, one had earned a master's degree, and two had earned the doctorate. Four reported having some health-related professional experiences abroad.

For reporting results from the interviews, our findings follow in the subsections. We summarize information from the interviews including: primary reasons for TCM coverage in the NHI system; positive factors that facilitated TCM utilization; problems to consider in TCM coverage through universal insurance; improvements to better integrate TCM; acknowledgement of the health benefits of TCM treatments; possibility of TCM integration

in the United States; and freedom for accessibility to licensed TCM practitioners. Each topic is discussed in more detail in the following subsections.

Primary reasons for TCM coverage in the NHI system. Asked for the primary reasons for the integration of TCM in the NHI system, the majority of the respondents mentioned tradition. As one respondent stated, "... the fact that TCM has survived this long and still exists is reason in itself that it should be in the universal health system." Several respondents suggested TCM as an alternative source of care helped in the facilitation of care. They reasoned that issues in western medicine, such as the often perceived lack of effectiveness in some medications, likely prompted the demand for TCM or its continued use. Additionally, the belief in TCM has a significant influence in its being covered and implemented in the NHI process. Notwithstanding the safety or efficacy standards, many respondents expressed that the history of TCM and its endurance through the centuries gives credence to its healing potential. One respondent stated, "it has a thousand years of trial and error" while another responded "the Taiwanese people believe in its healing effects and have been using it for a very long time." While western medicine remains the primary modality for immediate treatment, TCM is utilized for chronic illnesses where a patient may perceive the benefits of TCM to improve ability in daily life to manage the illness.

Positive factors that facilitated TCM utilization. Respondents were asked about the positive factors that have facilitated the utilization of TCM within the universal health system. Several respondents indicated that incorporation of TCM in the NHI can lower the payment burden of the public thereby serving those who may otherwise not afford treatments. In one instance, a respondent gave a detailed explanation of the benefits of TCM medicine as compared to western medicine to show specific benefits of TCM compared to

western medicine and to enhance the treatments provided by western medicine. Another respondent referred to the downsides of western methods that utilize prescription medications, suggesting that TCM, being made from natural herbs, would be less likely to harm the body. However, one respondent cautioned that TCM or western medicine should only be used if one has health issues because “too much of anything could become a poison.” Otherwise, many respondents strongly advocated the safety and effectiveness of TCM. One respondent did mention the importance of considering the environmental costs associated with different medicines, suggesting “if western medicine is thrown away and not used, it is important to consider the environmental problems that must be taken into account when disposing of unused medications, compared to TCM where the herbs are natural, so less concern when disposing of unused medicines.”

Problems to consider in TCM coverage through universal insurance. When asked to discuss some of the problems associated with the TCM coverage in the universal system, the majority of the respondents mentioned the fundamental differences between TCM and western medicine. As one respondent summarized, “while TCM focuses on the yin-yang theories and the flow of qi the western medicine operates scientifically.” Others described that because of the western influence, there is a tendency to want to evaluate TCM with a set of specified western standards that are not necessarily applicable to TCM. One respondent explained, “When a TCM practitioner joins the health insurance system, it may not provide the appropriate compensation for the level and time of the treatments.” Two scenarios were highlighted by a respondent where TCM practitioners may be influenced by the reimbursement according to the time devoted to the assessment. That is, to maximize patient

volume for reimbursement of specified treatments, the practitioner may invest less time with an individual patient or a specified treatment.

Several respondents also mentioned the need to carefully evaluate the credentials and experiences of the TCM practitioners and recognize efficacy as a priority. In particular, the consideration for appropriate licensure and training were identified by most respondents as an important consideration. It is important to evaluate the quality of TCM practitioners to ensure that the quality of care is not diminished. For the NHI system to cover TCM treatments there is a need to ensure that practitioners have the experience and background to practice in Taiwan. Efficacy was a prioritized concern. As one respondent described, “One of the primary problem is the complexity of herbal remedies.” Different TCM practitioners offer different remedies and because of the complexity of the treatments, it becomes very difficult to measure the benefits and results. Lastly, the majority of TCM treatments and processes are derived from historical records and guidelines. Without proper scientific research, as one respondent commented, “The two approaches, western medicine and TCM, just do not see eye to eye.”

Improvements to better integrate TCM. When asked for suggestions and improvements to better integrate TCM, several respondents recognized the need to identify and prioritize the issues that need to be attended. Several respondents suggested the need for attention to real integration of TCM and western practitioners. In the words of one respondent “... the two modalities must work together instead of just coexisting.” Other respondents suggested the need for attention to monitoring and/or reducing overutilization and eliminating wastefulness of resources. For example, the importance of ongoing efficacy studies was mentioned by several respondents as a topic that requires immediate attention if

TCM is to garner broader acceptance in the western medical community. The importance was highlighted by one respondent who commented, “the future of healthcare is in preventative medicine” and “opportunities exist in the collaborations.” The responses provided some indication that TCM, while it has been utilized for centuries, has not matured compared to western medicine.

Acknowledgement of the health benefits of TCM treatments. The majority of respondents agreed that it is necessary for western practitioners to acknowledge the health benefits of TCM treatments in order for longer term integration of the two modalities. Two respondents expressed that acknowledgment is not necessary in order for the two modalities to co-exist. Proponents of better integration between western medicine and TCM emphasized that mutual understanding would promote synergy. As one respondent elaborated, “...the integration validates and accurately determines the diagnosis.” All respondents expressed the ongoing difficulties of integration given the fundamental differences between the two treatment modalities. One respondent who did not think western acknowledgement was necessary explained, “Western treatments and TCM treatments are completely different disciplines and are completely different ways of addressing a problem” and the other respondent stated, “the two disciplines speak in completely different languages.” One respondent further clarified that the methods and explanations behind TCM and western medicine are so different that each cannot understand the other’s fundamental theories behind treatment processes. Some training and integration across the western and TCM practitioners could begin to address the acceptance and understanding. Though TCM is rooted in tradition and the concurrent use with western modalities in Taiwan is common, the responses suggest there are still obstacles for mutual collaborations.

Possibility of TCM integration in the United States. Regarding TCM treatments in western countries, the respondents were asked to provide suggestions or issues that would be important to address if the United States were to consider the inclusion of TCM treatments into a national healthcare system. Several respondents expressed unawareness of the growing popularity of alternative medicine in other countries. As to the ability to integrate TCM into the other universal healthcare systems, several expressed the lack of understanding of TCM as a barrier. One respondent answered, “It will be very difficult. There is not a history of understanding TCM. They need to know about it and no one teaches it. It is not as common as it is here.” Many respondents commented on the necessity of providing education and training in order to expose western medical practitioners to the benefits of TCM and to be sure that TCM practitioners are trained appropriately if they are to practice in the country. One respondent doubted the idea that people in United States would use TCM widely. Most respondents agreed that introduction of TCM coverage by insurance in the United States would be very difficult given the predominance of western medicine. Another concern expressed was “the need to be aware of the credentialing and verifying the training of TCM practitioners purporting to be knowledgeable of TCM” and “the need to be very careful not to get tricked.” “There needs to be proper credential checks and proper experiences must be documented,” advised another respondent.

The respondents were asked their opinions about whether the pharmaceutical industry positively or negatively views TCM. All the respondents answered that TCM coverage in the universal health system was positively viewed by the pharmaceutical industry. Several respondents commented on the increase in profitability for pharmaceutical outlets due to the insurance coverage. One respondent stated, “Powder TCM treatments help pharmaceuticals.

They make TCM available in pill form which increases the filling of prescriptions.” Unlike western medications where research and development as well as strict government regulations restrict the profitability, mass production of TCM has been based on preexisting formulations.

One respondent indicated that standardization of TCM and acceptance in the pharmaceutical industry is a good thing and explained, “It prevents misuse of medicine and it is less expensive. Whereas TCM practitioners could prescribe wrong drugs or just prescribe anything in order to get reimbursed, it is important to have some oversight.” Because of the ambiguity of TCM diagnostic process, it is highly sensitive to corruption. While the coverage of TCM in the health insurance system has lowered the cost of TCM treatments for patients, there are “many practitioners that opted out of reimbursement, allowing them to charge premiums for their services” without concern for the customary reimbursement specified by the NHI system. Several respondents mentioned that there is a stratification of price between different types of medicine and some TCM treatments are extremely expensive. The powder form helps pharmaceuticals, while medicines made from more exotic ingredients are not covered under the health insurance system.

Freedom for accessibility to licensed TCM practitioners. The respondents were asked for ideas on the changes that the universal health insurance system should consider in the freedom for accessibility to licensed TCM practitioners. The current system allows patients to visit any TCM clinic without a gatekeeper. The majority of the responses supported freedom in accessibility. The respondents explained that the purpose of the health insurance system was to provide equal opportunity to healthcare for all and that limitations should not impede that process. In the words of one respondent, “TCM practitioners are

everywhere and people are everywhere. Taiwan is small where transportation is fast and readily accessible; this is the way that it should be with freedom of choice for healthcare.”

One respondent noted that there may be changes in restrictions on TCM practitioners with licenses outside Taiwan and noted that there may be progress in studying abroad and coming back to practice in Taiwan.

Survey Results

Of the 45 surveys conducted, 44 had usable results. Twenty-seven (or 61.4 percent) reported being male and 12 (or 27.3 percent) reported being female, with the remainder not reporting. Four of the 44 respondents were 18-25 years old (or 9.1 percent), five were 26-35 years old (or 11.4 percent), nine were 36-45 years old (or 20.5 percent), nine were 46-55 years old (or 20.5 percent), nine were 56-65 years old (or 20.5 percent) and six were 66 years old or older (or 13.6 percent). Two respondents did not report their age. With respect to highest level of education, seven respondents reported high school (or 15.9 percent), seven reported some college (or 15.9 percent), twelve reported a bachelor’s degree (or 27.3 percent), six reported a master’s degree (or 13.6 percent), and nine reported a doctorate (or 20.5 percent) with three not reporting.

Table 1 shows the descriptive statistics and correlations of these 44 surveys related to our initial question of satisfaction with Taiwanese NHI. A 5-point Likert scale was used and reverse coded for analysis with (1) representing strongly disagree to (5) representing strongly agree. As one can see from Table 1, there is great perceived satisfaction with the NHI. Also, three of our four variables have correlations with this perceived satisfaction in the NHI system. The only variable that is statistically non-significant is perceived satisfaction with the quality of TCM treatments covered by NHI.

Table 1. Means, Standard Deviations and Correlations for Variables

Variable	Mean	S.D.	NHI	Reimburse	Choice	Quality	Culture
NHI	4.068	.974	-				
Reimbursement	3.773	.912	.385**	-			
Choice	3.932	.625	.313*	.013	-		
Quality	3.523	1.023	.220	.455**	.166	-	
Culture	4.273	.973	.348*	.098	.108	.087	-

n=44 * significant at the 0.05 level ** significant at the 0.01 level

Table 2 shows the results for the linear regression analysis. Again, three of the four variables are statistically significant. The model explains 32.2 percent of the perceived satisfaction with the NHI ($p=.004$). The results indicate that the perceived appropriateness of reimbursement of TCM and choice in the selection of TCM treatments affect the level of satisfaction with the NHI, as does the perceived effect of culture. This means that the level of satisfaction with TCM reimbursement and choice of TCM treatments are associated with overall satisfaction with the NHI. Also, there is a relationship between individuals who think that culture plays a role in utilizing TCM and satisfaction with NHI. The perceived satisfaction with the quality of TCM treatments covered by the NHI is not only statistically non-significant, but the direction of the relationship is negative. To test for multicollinearity, we ran a variance inflation factor (VIF) analysis and determined no issues with multicollinearity ($VIF < 1.4$).

Table 2. Regression Results for Satisfaction with Taiwan Health Insurance

Variable	Unstandardized Coefficients		Standardized Coefficient	t	Sig.
	B	Std. Error	Beta		
Reimbursement	.385	.159	.360	2.419	.020
Choice	.437	.210	.281	2.083	.044
Quality	-.014	.143	-.015	-.099	.922
Culture	.284	.133	.284	2.129	.040
R ² = .322					
n=44					

We analyzed data related to the demographics of the survey respondents. Analyses showed that there were no statistical relationships among the respondents' age, gender or educational level related to satisfaction with the NHI (results not shown).

We also had an interest in knowing about the survey respondents' perception of the health benefits of TCM. We asked them to rank order from strongly disagree (1) to strongly agree (5) the statement: "I believe in the health benefits of TCM." The average respondents' reply was 3.8 on this 5 point scale. We performed a linear regression analysis testing the relationship that exists among a belief in the health benefits of TCM and our previous independent variables. Table 3 shows these results. The model explains 27.4 percent of the perceived belief in the benefits of TCM ($p = .012$). This analysis also provided similar non-significant VIF results. Our results indicate that only respondents' belief in TCM being appropriately reimbursed has a significant statistical relationship with belief in health benefits of TCM. In our results culture is not related to belief in the health benefits of TCM.

Table 3. Regression Results for Belief in Health Benefits of Traditional Chinese Medicine

Variable	Unstandardized Coefficients		Standardized Coefficient	t	Sig.
	B	Std. Error	Beta		
Reimbursement	.515	.195	.407	2.646	.012
Choice	.073	.163	.275	1.994	.053
Quality	.017	.176	.015	.097	.923
Culture	.326	.257	.040	.284	.778
R ² = .274					
n=44					

When we performed a linear regression to see if the respondents' age, gender or educational level related to belief in health benefits of TCM, we found non-significant findings (results not shown). This may relate to our finding related to belief in health benefits of TCM. When we examine the correlations between satisfaction with NHI and belief in the benefits of TCM we see a relationship .303 ($p = .046$).

DISCUSSION AND CONCLUSIONS

This study examined the practice of TCM in Taiwan as related to the NHI system. We interviewed Taiwanese healthcare professionals about their general perceptions of TCM that is covered by the NHI system and supplemented the analysis with a survey of healthcare professionals. Results of our study are used to offer several observations and recommendations about TCM and patient satisfaction with reimbursement by the NHI system. We found that the perceived satisfaction with TCM reimbursement and choice are positively related to the satisfaction with Taiwan's national healthcare system. The study

may provide relevant information for others contemplating the integration of TCM into their health care system.

Our study has implications for theory and practice. The study demonstrates that the perceived satisfaction with TCM is high, which is consistent with previous research. Perceived belief in TCM also is seen as being related to perceived satisfaction with NHI. Our qualitative and quantitative results, combined with the literature, suggest that a health system designed with the desires and consent of the populace in mind may lead to better satisfaction with the health system post-development. This may be inherent in the reimbursement level and access or choice variables. Our results related to quality may represent the fact that individuals are not assigned providers, but rather choose providers themselves—thus, the non-significant findings. Another practical importance of the study is that it provides insights from professionals known to have experience with the NHI system in Taiwan and TCM.

The results of our study are limited in several ways and should be interpreted with caution. Inherent in our study is the concern about generalizability. Taiwan is unique in its social, historical, cultural and political context in developing the universal healthcare system. The lessons from this study may not be generalizable or transferrable to other health care systems; however, the results do provide practices that may have implications for other universal health care systems considering the coverage and reimbursement of TCM. Our study is limited by the sample choice in that we interviewed professionals with knowledge of TCM and the NHI. Our interviews intentionally targeted known experts. Also, the survey response rate is modest and surveys were conducted only in Taipei, so generalization to non-respondents and the general population may not be possible. Since this is not a nationwide

survey, a future study including a nationwide survey is needed. Also, our study used a deliberate research approach throughout all phases of the research design, data collection and data analysis.

Studies involving language translation to examine national health systems are relatively uncommon and involve some challenges for researchers. Future studies would be needed to provide a more complete view by incorporating a broader interview set. To provide causal inferences among the variables, longitudinal research would be beneficial. Likewise, our survey was limited by sample size. Future research is needed to learn more about TCM's role as complementary to or integrated with western medicine, and we anticipate additional research on the topic in the future.

The universal health insurance system in Taiwan is well-established, yet continues to evolve as stakeholders examine the financial condition, political environment and interests of the public and providers (Wang, 2012). With regard to some recent reforms of the NHI, the changes in the NHI payment system and delivery may change the allocation of resources among healthcare providers and patients. We sought new insight into the relationship between TCM and the NHI by studying perceived satisfaction. Our research has added to the knowledge of TCM and its coverage by the NHI system through interviews and survey conducted in Taiwan with health care professionals. Given the growing interest in TCM and other alternative medicine in many western countries (e.g., Ni et al., 2002), the results may have implications for other economies and countries considering changes in their health care delivery systems. The study may be of interest to health care professionals considering the benefits of TCM or exploring the coverage of TCM as a component of universal health care coverage.

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APPENDIX A. INTERVIEWEE CONSENT FORM

I understand the purpose of this interview is for a research project to study the integration of traditional Chinese medicine into the Taiwanese national health insurance system in order to better understand possible implications for the United States healthcare system. The duration of the interview is expected to be approximately one hour and will take place during the period December 19, 2012 to January 9, 2013.

I understand that no individual participants will be identified in any report on this research; interview responses will be used in group analyses of the data. I understand that participation in this research is completely voluntary, and I can withdraw from participation at any time. I may answer any or all of the questions during the interview. I understand there are no foreseeable risks associated with my participation in this research project.

I understand that I may consent for my comments in the interview to be audio recorded. With consent to audio record the interview, I give Charles Chuang the ownership of the audio recordings and transcripts from the interview that he conducts with me and understand that the audio recordings and transcripts will be kept in the possession of the researcher. I understand that information or quotations from the audio recordings may be used as a source in publication of the researcher’s master thesis, academic and trade conferences, and publications unless specified otherwise. I understand that participants’ identities remain anonymous and no individual information will be released or made available to anyone other than the researchers directly involved in the study without my written consent.

Initial the statement that applies:

_____ I give permission for the interview to be audio recorded.

_____ I do not give permission for the interview to audio recorded.

I have read and understand this Interviewee Consent Form and conditions of the research project. I have had all my questions about participation answered. I hereby acknowledge and give my voluntary consent to participate. Should I have questions about the research, I may contact Charles Chuang at chuangc@appstate.edu, Dr. Betty Coffey at coffeybs@appstate.edu or (828) 262-6217 or Office of Research Protections at irb@appstate.edu at Appalachian State University.

Name of Interviewee (printed)

Name of Interviewer (printed)

Signature of Interviewee

Signature of Interviewer

Date of Interview

APPENDIX B. INTERVIEW QUESTIONNAIRE

The purpose of this interview is for a research project to study the integration of traditional Chinese medicine (henceforth, TCM) into the Taiwanese national health insurance (henceforth, NHI) system in order to better understand possible implications for the United States healthcare system. TCM is defined as:

“A medical system that has been used for thousands of years to prevent, diagnose and treat disease. It is based on the belief that qi (the body's vital energy) flows along meridians (channels) in the body and keeps a person's spiritual, emotional, mental, and physical health in balance. TCM aims to restore the body's balance and harmony between the natural opposing forces of yin and yang, which can block qi and cause disease.” -National Institute of Health

1. Describe the primary reasons that Taiwan decided to integrate TCM into the NHI system.
2. Identify some of the positive factors that facilitated integration of TCM into the NHI.
3. Identify some of the problems in integrating TCM into the NHI system.
4. Using the scale provided, please give your opinion on the statement.

Taiwanese are satisfied with the coverage of TCM by the NHI system.

Strongly Agree	Mostly Agree	Neutral	Mostly Disagree	Strongly Disagree
1	2	3	4	5

5. Rank order the referral sources to a licensed TCM practitioner from 1 to 5 where 1=most common referral to 5=least common referral.

_____ Family recommendation
_____ Personal experience with a TCM provider
_____ Western physician
_____ Media (such as newspaper, television, Internet)
_____ Other referral source (specify) _____

6. Rank order the most common approach for prescribing TCM for the disease category where 1=most preferred approach to 5=least preferred approach.

APPROACH	DESCRIPTION
TCM Stand-alone	TCM should be prescribed and used alone as treatment.
TCM Secondary	TCM should be prescribed secondarily as a form of treatment.
TCM Complementary	TCM should be prescribed equally along with western medicine.
TCM Supplementary medicine.	TCM should be prescribed as supplement and secondary to western medicine.
TCM Never	TCM should never be prescribed for this disease category.

DISEASE CATEGORY	TCM Stand-alone	TCM Secondary	TCM Complementary	TCM Supplementary	TCM Never
Respiratory	_____	_____	_____	_____	_____
Musculoskeletal	_____	_____	_____	_____	_____
Circulatory	_____	_____	_____	_____	_____
Genitourinary	_____	_____	_____	_____	_____
Digestive	_____	_____	_____	_____	_____
Other:_____	_____	_____	_____	_____	_____

7. In your opinion, to what extent are TCM providers satisfied with the level of reimbursement by NHI?

Strongly Satisfied	Mostly Satisfied	Neutral	Mostly Dissatisfied	Strongly Dissatisfied
1	2	3	4	5

8. In your opinion, to what extent are patients satisfied with NHI's level of reimbursement for TCM?

Strongly Satisfied	Mostly Satisfied	Neutral	Mostly Dissatisfied	Strongly Dissatisfied
1	2	3	4	5

9. In your opinion, to what extent are western medical physicians in Taiwan satisfied with NHI's level of reimbursement of TCM treatments?

Strongly Satisfied	Mostly Satisfied	Neutral	Mostly Dissatisfied	Strongly Dissatisfied
1	2	3	4	5

10. In your opinion, to what extent do western medical practitioners in Taiwan acknowledge the health benefits of TCM treatments?

Always	Mostly	Sometimes	Seldom	Never
1	2	3	4	5

11. Using the scale provided, please give your opinion on the statement.

TCM is appropriately reimbursed by NHI.

Strongly Agree	Mostly Agree	Undecided	Mostly Disagree	Strongly Disagree
1	2	3	4	5

12. We have a few questions about NHI's reimbursement for TCM treatments.

- How does NHI determine the TCM treatments that are covered by NHI?
- Are reimbursement amounts based on the disease category, the diagnosis, or some other method?
- Are TCM providers reimbursed directly and can the patient be reimbursed for costs by NHI?
- How does NHI determine if a TCM treatment is safe?
- How does NHI determine if a TCM treatment is effective?
- Must the TCM provider be licensed to receive reimbursement from NHI?
- Does NHI periodically revise the list of approved TCM treatments? If so, how?

13. In your opinion, to what extent should each of the following be used as a measure of quality for TCM?

	Definitely Yes	Probably Yes	Unsure	Probably Not	Definitely Not
Equitability	1	2	3	4	5
Morbidity	1	2	3	4	5
Mortality	1	2	3	4	5
Patient Satisfaction	1	2	3	4	5
Performance	1	2	3	4	5
Quality of life	1	2	3	4	5

14. In your opinion, to what extent should each of the following be used as a measure of safety for TCM?

	Definitely Yes	Probably Yes	Unsure	Probably Not	Definitely Not
Infection rates	1	2	3	4	5
Inspection ratings	1	2	3	4	5
Internal/external assessment	1	2	3	4	5
Length of stay	1	2	3	4	5
Patient Surveys	1	2	3	4	5
Other	1	2	3	4	5

15. In your opinion, is it necessary for western medical practitioners to acknowledge the health benefits of TCM treatments for integration in NHI to be effective?

_____ Yes _____ No

Explain why or why not?

16. In general, does the pharmaceutical industry in Taiwan positively or negatively view the integration of TCM into the NHI system? Explain.

17. If a patient has private health insurance in addition to NHI, the patient's utilization of TCM will probably:

Increase Significantly	Increase Slightly	Stay about the Same	Decrease Slightly	Decrease Significantly
1	2	3	4	5

18. TCM treatments that are covered by NHI would be affordable to the typical citizen if NHI did not cover the treatments.

Strongly Agree	Mostly Agree	Undecided	Mostly Disagree	Strongly Disagree
1	2	3	4	5

19. Based on your experiences with NHI and TCM, are there improvements that you would suggest to better integrate TCM into the NHI system?

20. What changes, if any, should the NHI system consider in the freedom for accessibility to licensed TCM practitioners?

21. If the United States were to integrate TCM into a national healthcare system, what are some suggestions or issues that would be important to address?

22. Do you have anything else that would be useful for our research project that we have not discussed?

23. Check the category that best describes your current employment?

- _____ Government agency
- _____ National health insurance
- _____ Private health insurance
- _____ Hospital western medicine
- _____ Hospital TCM
- _____ Pharmacy
- _____ Western medicine physician
- _____ Traditional Chinese medicine practitioner
- _____ Other (specify): _____
- _____ Not employed

24. How many years of full-time work experience do you have?
 None 5 years or less 6-10 years 11-15 years 16-20 years 21 or more years
25. What is your age?
 18-25 26-35 36-45 46-55 56-65 66 and over
26. What is your gender? Female Male
27. What is the highest level of education that you have completed?
 High school
 Some college
 Bachelor's degree
 Masters
 Doctorate
 Other training (specify): _____
28. Do you have educational and/or professional experiences outside Taiwan?
 No Yes (If yes, answer a and b)
- a) Check all experiences outside Taiwan:
_____ High school education or earlier
_____ Undergraduate education
_____ Study abroad
_____ Graduate education
_____ Work experience
_____ Other experience (specify): _____
- b) Total duration of experiences outside Taiwan.
 1 year or less 2-5 years 6-10 years 11-15 years 16-20 21 or more years

Thank you for participation in our research study.

APPENDIX C. SURVEY

We request your participation in a survey about perceptions of the integration of traditional Chinese medicine (henceforth, TCM) in the Taiwanese national health insurance (henceforth, NHI) system. Your participation is voluntary and all individual survey participants will remain anonymous. By completing the survey you are consenting to the use of the responses in group analyses of the survey data. We anticipate that the survey will take approximately twenty minutes to complete. This research project is being conducted at Appalachian State University, Boone, North Carolina, USA. If you have questions about the research, please contact Charles Chuang at chuang@email.appstate.edu or Dr. Betty Coffey at coffeybs@appstate.edu.

For purposes of this survey, TCM is defined as:

“A medical system that has been used for thousands of years to prevent, diagnose and treat disease. It is based on the belief that qi (the body’s vital energy) flows along meridians (channels) in the body and keeps a person’s spiritual, emotional, mental, and physical health in balance. Traditional Chinese medicine aims to restore the body’s balance and harmony between the natural opposing forces of yin and yang, which can block qi and cause disease.”

-National Institute of Health

For each question please circle one answer using the scale from 1 to 5.

Question	Strongly Agree	Mostly Agree	Undecided	Mostly Disagree	Strongly Disagree
1. Taiwanese are satisfied with the coverage of TCM by the NHI system.	1	2	3	4	5
2. TCM is appropriately reimbursed by NHI.	1	2	3	4	5
3. TCM treatments that are covered by NHI would be affordable to the typical citizen if NHI did not cover them..	1	2	3	4	5
4. In Taiwan the utilization of TCM is greatly influenced by tradition.	1	2	3	4	5
5. In Taiwan the utilization of TCM is greatly influenced by culture.	1	2	3	4	5
6. Individuals have appropriate level of choice in selection of TCM treatments.	1	2	3	4	5
7. TCM is always preferred over modern western medicine.	1	2	3	4	5
8. I believe in health benefits of TCM.	1	2	3	4	5
9. Taiwanese citizens are satisfied with the quality of TCM treatments covered by NHI.	1	2	3	4	5
10. The costs of healthcare are reduced by the effective integration of TCM.	1	2	3	4	5
11. Whenever possible Taiwanese prefer modern western medicine without TCM.	1	2	3	4	5
12. Overall health status in Taiwan is much better because TCM is integrated in NHI.	1	2	3	4	5

13.	Patients make the decision to utilize TCM based primarily on a physician's advice.	1	2	3	4	5
14.	Taiwan citizens are satisfied with the national healthcare system.	1	2	3	4	5

For each question please circle one answer using the scale from 1 to 5.

Question	Strongly Satisfied	Mostly Satisfied	Neutral	Mostly Dissatisfied	Strongly Dissatisfied
15.	1	2	3	4	5
16.	1	2	3	4	5
17.	1	2	3	4	5

Question	Always	Usually	Sometimes	Seldom	Never
18.	1	2	3	4	5
19.					
Education	1	2	3	4	5
Age	1	2	3	4	5
Wealth	1	2	3	4	5

Question	Very Important	Somewhat Important	Unsure	Somewhat Unimportant	Not at all Important
20.	1	2	3	4	5

Question	Definitely Yes	Probably Yes	Unsure	Probably Not	Definitely Not
21.	1	2	3	4	5
22.	1	2	3	4	5
23.	1	2	3	4	5
24.	1	2	3	4	5
25.	1	2	3	4	5

26. Based on your experiences with NHI and TCM, are there improvements that you would suggest to better integrate TCM into the NHI system?

27. Do you have anything else to add for us to know about TCM and NHI?

28. Check the category that best describes your current employment?

- Government agency
- National health insurance
- Private health insurance
- Hospital western medicine
- Hospital TCM
- Pharmacy
- Western medicine physician
- Traditional Chinese medicine practitioner
- Other (specify): _____
- Not employed

29. How many years of full-time work experience do you have?

- None
- 5 years or less
- 6-10 years
- 11-15 years
- 16-20 years
- 21 or more years

30. What is your age?

- 18-25
- 26-35
- 36-45
- 46-55
- 56-65
- 66 and over

31. What is your gender? Female Male

32. What is the highest level of education that you have completed?

- High school
- Some college
- Bachelor's degree
- Masters
- Doctorate
- Other training (specify): _____

33. Do you have educational and/or professional experiences outside Taiwan?

- No
- Yes (If yes, answer a and b)

a) Check all experiences outside Taiwan:

- High school education or earlier
- Undergraduate education
- Study abroad
- Graduate education
- Work experience
- Other experience (specify): _____

b) Total duration of experiences outside Taiwan.

- 1 year or less
- 2-5 years
- 6-10 years
- 11-15 years
- 16-20
- 21 or more years

Thank you for your participation in the survey.

Vita

Charles Chuang was born in Charlotte, NC. He attended elementary schools in Charlotte, and graduated from Butler High School in 2007. The following autumn he entered East Carolina University and later transferred to Appalachian State University. In May 2011 he was awarded a Bachelor of Science in Business Administration with a major in Healthcare Management at Appalachian State University. In the fall of 2011, he was accepted to the Master of Business Administration program at Appalachian State University and was awarded the degree in May 2013.

Mr. Chuang is a member of Phi Eta Sigma. His parents are Sam Yue of Shanghai, China and Ivy Chou of Taipei, Taiwan.