Examining the Use of Biomedicine and Folk Medicine across Socioeconomic Factors and Health in China

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Abstract

The current study analyzes the influences of access to biomedicine and folk medicine on the relationship between socioeconomic factors (measured by income and urbanicity) and health outcomes (measured by infectious and chronic disease prevalence). This study tests a medical system mediational framework whereby socioeconomic factors influence health through access to biomedical preventive care and TCM resources. This framework was tested against a disease prevention mediational framework whereby socioeconomic factors influenced the use of different health resources through health outcomes. Both frameworks were tested when infectious and chronic disease prevalence was compared to the general sample and when the two disease groups were compared to each other. This epidemiological study analyzed data from the 2011 wave of the China Health and Nutrition Survey (CHNS), which included respondents in a multistage random cluster design from industrial urban and rural centers across nine provinces in China. Results showed that while biomedical preventive care and TCM individually accounted for variations in how socioeconomic factors impacted disease prevalence, socioeconomic factors did not affect health through this access to health resources. As such, it seems that access to both biomedical and folk medical health resources seems to affect socioeconomic factors’ influence on health through mechanisms completely independent of the given relationship. In contrast, results for the disease prevention mediational framework when disease prevalence was compared with each other showed that the socioeconomic factor of income affected TCM use through health outcomes. As such, it seems that health outcomes may affect how socioeconomic factors effect access to biomedical and folk medical health resources.


**Introduction**

Western biomedicine is both a godsend as well as problematic. Biomedical preventions and treatments have had astounding effects in reducing mortality due to infectious disease with the consequence of increased longevity and the rise of chronic disease across the world. This spread of biomedicine has undoubtedly resulted in changes to local cultural frameworks of medicine and health, especially in the belief and usage of folk medicine. Who uses biomedical preventive resources as compared to folk medicine in rapidly developing countries? What factors are involved in the accessibility to each type of resource? How does the use of biomedicine as compared to folk medicine affect disease and health patterns across communities? And can folk medicine alleviate some of the consequences of chronic disease generated by biomedicine? This paper attempts to answer some of these questions by analyzing how the relationship between socioeconomic factors and health in China may be influenced or accounted for by the use of biomedicine and traditional Chinese medicine (TCM). The following introduction will outline the effects globalization has had on traditional folk medicines, how globalization has affected health patterns worldwide, and how the factors of income and urbanicity specifically have affected health outcomes in developing nations. This section will close with discussions on why this study is looking specifically at China and the current study’s main objectives and hypotheses.

**Western Globalization's Effects on Traditional Folk Medicine**

A discussion of the effects of biomedical versus folk medicines on health begins with the global influence of Western biomedicine. The concept of medical pluralism suggests that even if biomedicine becomes the dominant medical system in a society, traditional and folk medical understandings and practices are not completely replaced. Furthermore, this framework of
medical pluralism predicts that even in societies that heavily emphasize biomedical practices, traditional etiologies of health and their associated treatments are used by significant numbers of people (Janes, 1999, 1803-1804). This framework was constructed off of early observations that many local ethnomedical etiologies incorporated elements of other medical frameworks, such as Chinese “barefoot doctors” in rural communities who incorporated both TCM and biomedical etiologies and treatments in their mentorship of rural village health workers (Janes, 1999, 1804; Zikuan, 1985, 22).

Reality, however, shows that medical pluralism is not universally practiced; rather, traditional folk medicines are often undermined as obsolete by modern Western biomedical etiologies (Janes, 1999, 1804). Janes argues in the case of Tibetan folk medicine that biomedical etiologies establish dominance over traditional etiologies through the guise of social progress and development associated with modernization (Janes, 1995, 6-7, 24, 26). This process can be seen for other local ethnomedical practices, including TCM in China.

China’s introduction to Western biomedicine occurred via 19th century missionaries as part of globalization and development efforts, but only gained in prominence over TCM after showing its efficacy in treating patients of a plague epidemic in the early 20th century. The transition of power from the Nationalist government to the Communist government in 1949 ushered in a fervent renewal for the modernization and Westernization of medicine in China. This can be seen in the rise in biomedical practitioners and the decrease in TCM practitioners between the start of the People’s Republic of China and the late 1970’s (Lee, 1982, 631-633).

However, the development of the medical system in China during the second half of the 20th century may not completely be incompatible with the framework of medical pluralism. For example, in addition to modernizing medicine, the new Communist government also pushed for
the expansion of medical services, both biomedical and TCM, to both urban and rural citizens across the country (Lee, 1982, 633). Although globalization introduced and secured biomedicine as the preferred medical system over TCM, TCM was not completely subsumed under the new Western medical system. Rather, TCM continued in practice alongside biomedicine, but to a far less substantial degree than before (Lee, 1982, 633). The parallel existence of both TCM and Western biomedicine in the Chinese medical system seems perplexing given that the efficacy of biomedicine in treating the plague epidemic, the main historical event that put biomedicine in a higher and more favorable status than TCM, should have mostly or completely delegitimized traditional etiologies. Janes suggests that the reason why folk medical systems, such as TCM in this case, remain in operation and are not completely subsumed under biomedicine is because traditional etiologies contextualize suffering to broader “social and cultural phenomena” that isolated biomedical explanations and medicines fail to offer (Janes, 1999, 1805). This also explains why more robust folk medical systems may resist attempts to standardize techniques and practices or to become more similar in practice to biomedicine. Janes’ explanation of the importance of folk medical etiologies relays the importance of including folk medicine in the current study’s mediational models on health patterns in China.

Overall, the modern Chinese medical system sustains both biomedical and TCM practices, thus requiring another analysis of the medical pluralism framework. This study examines the factors – socioeconomic and disease burden – associated with medical pluralism.

To preface the next few sections, a discussion regarding the effects of globalization on health is required. The rapid socioeconomic and cultural changes associated with globalization of developing countries have significant consequences for health and usually result in a “health transition” in those nations. This phrase signifies changes in the more distal determinants of
health, such as increased focus on community support and involvement in developing “comprehensive and accessible health programmes” (Caldwell, 1993, 126). Culture and ethnicity have been observed to play significant roles in mediating the effects of globalization. Caldwell (1993) explains the results of a United Nations study that examined factors of health outcomes, especially child mortality, from a range of developing countries in Africa, Asia, and Latin America. Controlling for economic and other social variables, researchers found significant differentials in health outcomes for the factors of ethnicity and parental education, both of which affect child care practices and thus child mortality. Importantly, greater parental education as well as urbanization was found to reduce those child mortality differentials across ethnicities (Caldwell, 1993, 131). As such, globalization of Western ideals impacts health through a clash of cultural and religious values with local ethnic and religious frameworks, among other economic and social factors. The ability of globalization to impact health is therefore dependent on the malleability and receptivity of local world views to Western ideologies and understandings of health.

Interestingly, Caldwell found a weak relation between income and decreased mortality, suggesting that economic improvements may not be as influential in affecting the specific health outcome of mortality as compared to other social and cultural factors (1986, 179). However, given that the current study examines broader health outcomes in terms of prevalence of infectious and chronic disease rather than mortality, income and urbanicity both remain important determinants of health. The next two sections discuss the relations that have already been determined between these determinants of health and health outcomes in China. This discussion will provide a context for the current study’s aims and hypotheses.

Why China?
China serves as an interesting case for the study of epidemiological transitions. While such transitions from widespread infectious epidemics to rises in chronic disease occurred more gradually for Western nations, this transition occurred within a time-frame of a couple of decades in China, which is a far more rapid transition than previously witnessed. With the creation of the People’s Republic of China, measures of mammoth proportions were undertaken regarding infectious disease prevention and treatment. Increases in vaccinations and medical resource access; improvements in “hygiene, sanitation, and water quality”; and expansion of higher education, better quality of social and living conditions, and improved housing conditions were all included in these widespread public health measures (Yang, et al., 2008, 1697). Moreover, improvements to other social determinants of health, such as increased income, also facilitated this epidemiological transition. Increased longevity due to decreased childhood and early adulthood mortality from infectious disease control measures, coupled with China’s decreasing fertility rates, further skewed the age structure of the population as a fertile locus for chronic disease development. This issue of increasing chronic disease due to skewed population age is further compounded by changes in diet, physical activity, and more lifestyle factors that are commonly associated with urbanicity and modern westernization (Yang, et al, 2008, 1697). What is fascinating about the introduction and adaptation of these lifestyle changes in China is, once again, the rapidity with which such changes have been implemented, especially after the opening of the Chinese economy to the global markets in the late 1970s.

It should also be noted that China underwent a major healthcare reform that attempted to increase access to health services and insurance to more rural areas (Yang, 2013, 1). This was in response to existing health policies that provided only the urban rich citizens with access to health resources and insurance (Yang, 2013, 1-2). As a result, China serves as an interesting
case study for analyzing the efficacy of this more expansive healthcare reform in improving health outcomes across income and urbanicity levels.

Thus, given the rapid pace of the epidemiological transition from infectious to chronic disease and the swift inclusion of western lifestyle factors that accompanied modernization, China is an excellent case study for how social determinants of health work through biomedical and traditional medical practices to affect health. Such an analysis decades after China’s initial opening to the global market can contextualize the epidemiological transition. What was the role of traditional folk medical beliefs in this transition? Did traditional medical practices have any protective effects for individuals that biomedical practices did not provide? In analyses of more modern data, how do traditional folk medicine and biomedical preventive care practices differentially or synergistically mediate the effects of social and economic inequalities on health? How have different groups been given an unequal burden of chronic or infectious disease due to their socioeconomic status or access to urban resources? The current study attempts to answer such questions and more.

**Urbanicity’s Effect on Health Practices and Accessibility**

Urbanization, as part of globalization and development, has drastic impacts on health outcomes. Given the rapid development of China since the development of the People’s Republic, it would do well to analyze how health patterns vary across urban and rural Chinese communities. This section starts with a brief history on the development of the rural-urban divide, how this influenced government rationing of resources and investment within urban communities, and the health outcomes that have developed in response to these policies.

Since the start of modernization efforts, the Communist government of China has employed a policy of “rural-urban division”, based in part on the belief that greater
industrialization of urban centers was the key for rapid development and the solution for China’s main problem of excess labor and land shortage (Knight & Song, 1999, 7-8). Given that the isolated Chinese economy had been primarily agrarian before the 1949 change in government power, the new government focused on investing resources and capital in industrial urban centers over rural agricultural communities, Gong, et al. explain that such a focus on urban industrialization led to a registry system that further stratified urban centers and their resources based on the type of residents in these areas (2012, 844). For example, someone registered as a non-agricultural resident in an urban center has access to more resources, such as healthcare, education, and housing as compared to a rural migrant, such as a farmer, registered as an agricultural resident in an urban center. As such, greater investment in urban centers and in residents registered as “urban” in these areas is one of the causes for the mass internal migration of rural labor to urban industrial jobs, better known as China’s “floating population” (Gong, et al., 2012, 844). Given the unequal distribution of resources in urban centers (including access to healthcare), it is most likely that health outcomes in terms of infectious and chronic disease are varied within urban centers as well as between urban and rural areas.

Indeed, Gong, et al. show how the rapid urbanization of China has led to a drastic increase in chronic disease in urban centers despite an overall reduction in infectious disease across the country (2012). Through a meta-analysis of previously conducted studies, they found that rural migrants to urban centers experienced “increases in blood pressure” than individuals who remained in rural communities (Gong, et al., 2012, 846). Additionally, rates of obesity, diabetes, cancer, heart diseases, and psychiatric diseases have skyrocketed in China since rapid urbanization began. Cancer rates are especially higher in urban centers than rural centers, and Shanghai in particular has seen a significant increase in hormonal cancers since the 1970s. This
rise in chronic disease is associated with factors of urban lifestyle, such as decreases in physical activity (in terms of occupational or otherwise), greater dietary fat consumption, and increased environmental stressors (for example, noise, social isolation, air pollution, etc.; Gong, et al., 2012, 846).

**Income’s Effect on Health Practices and Accessibility**

The disparities in access to health resources between rural and urban areas as well as within urban centers are further compounded by income stratification within the differing levels of urbanicity. Knight and Song suggest that employers often raise urban wage levels above competitive norms in order to attract higher quality employees (1999, 253). However, rural migrants that are attracted by higher wages in urban centers often find that those high wage positions are off limits to migrants from the countryside. In fact, the higher the urban wage levels rise, the higher the migrant unemployment and poverty rates in urban centers rise (Knight and Song, 1999, 253). The paradox of modernization is thus: industrialization should, in theory, improve health outcomes in urban centers primarily and to other areas secondarily given greater access to improved healthcare, yet income differentials within urban centers would most likely counter the benefits that industrialization offers.

Whether or not income differentials within urban centers affect health more than income differentials between urban and rural centers is the main question. Yang & Kanavos (2012) analyzed the interactive effects of income and urbanicity and adult health patterns in China by conducting analyses on data from the China Health and Nutrition Survey (CHNS) in 2006. They found that those in lower income levels were more likely to have difficulty accessing lifestyle factors that affect health, such as having limited access to leisure time and physical exercise. This limitation of physical activity in particular was even more significant for those in lower
income levels in more urban areas (Yang & Kanavos, 2012, 1). Overall, it was found that the urban poor were more likely to have poor health than the rural poor, resulting in greater inequalities in health among urban populations than among rural populations (Yang & Kanavos, 2012, 9-10).

The Current Study’s Hypotheses

Based off of the existing literature regarding these relationships, I propose 3 specific hypotheses:

1. Of either biomedicine or TCM, biomedicine will be the most common medical system used regardless of disease type, income, or urbanicity.
2. Of chronic disease patients, those in more urban areas and in lower income strata will be most likely to use TCM as compared to biomedicine.
3. Those in more urban areas and in lower income strata will be most likely to use TCM for infectious disease, but to a lesser degree than chronic disease TCM users.

The Current Study’s Relationships and Existing Research on those Relationships

Overall, urbanicity seems to be associated with a rise in chronic disease from rural to urban areas, but the factor of income complicates this generalization within urban centers as well as between rural and urban centers given that differentials in income affect access to healthcare. Now that the relationships between health, income, urbanicity, biomedical preventive care, and folk medicine have been discussed independently, I will discuss the current study’s model and the existing literature supporting the hypothesized relationships. The current study aims to address how the factors of income and urbanicity affect infectious and chronic disease prevalence and whether access to biomedical preventive care and folk medicine influence this association. Figure 1 explains the different relationships analyzed.
This framework was tested against the disease prevention mediational framework, explained in Figure 2.
Finally, the both the medical system mediational framework and the disease prevention mediational framework were tested where the patients comprising infectious and chronic disease prevalence were compared to each other rather than to the general sample (Figures 3 and 4 respectively).

Fig. 3: Medical System Mediational Framework when Infectious and Chronic Disease Groups Compared to Each Other
Fig. 4: Disease Prevention Mediational Framework when Infectious and Chronic Disease Groups Compared to Each Other

While existing literature on factors affecting prevalence of specific infectious and chronic diseases support the interactions between the independent and mediational factors in the above model, the current study aims to observe how infectious and chronic disease is affected overall by these factors. Some of the existing literature will now be explained before the current study’s specific hypotheses are discussed.

*Urbanicity/Income → TCM → Chronic Disease*

Chen et al studied the patterns of prescribing traditional Chinese herbs (either individually or combined) for sleep disorders such as insomnia and major depressive disorder (MDD) in Taiwan as compared to patterns of prescribing Western medications for such illnesses (2015). The researchers analyzed data from Taiwan’s “Longitudinal Health Insurance Research Database” from 2007 to 2011. Of 11,030 subjects with insomnia, only around 1300 used...
traditional Chinese herbs to treat their disorder, whereas of 11,571 subjects with MDD, only around 130 subjects used traditional Chinese herbs to treat their disorder. Of the insomniacs who used TCM, the majority were female and lived in the two most urban categories of urbanization. Additionally, almost half were between 25 and 44 years of age, and nearly a quarter were in the second lowest income strata. Similar statistics were seen for each of the covariates analyzed in the TCM users among sufferers of MDD. In short, this study revealed that in modern-day China, folk medicine, while used far less often than biomedical treatments, is used mainly by females and by the urban poor to treat sleep and mood disorders.

In contrast to the use of TCM to treat psychosomatic disorders, Huang, et al. studied TCM usage among patients who had the physical chronic disease of rheumatoid arthritis. Using data from the National Health Insurance Database, conducted a four-year longitudinal study with newly diagnosed patients between 2001 and 2009. They found that, on average, a little more than a quarter of rheumatoid arthritis patients were TCM users, and of this group, patients were more likely to be relatively young, female, and were more likely to live in more urban settings. Furthermore, a significant delay of almost two years from the initial diagnosis was found by those who consulted TCM clinics (Huang et al., 2015, 11). This delay was hypothesized by the authors of the study to most likely be the result of a lack of satisfaction with biomedical treatments. This implies that TCM and other alternative or folk medicines are secondary to Western biomedical practices (Huang et al., 2015, 13). Finally, the authors explain that one possible explanation for the relatively significant amount of TCM use in Taiwan comes from government insurance plans that promote the use of TCM by providing TCM treatments at lower costs than other forms of treatments. This can be seen as an overt effort by the state to preserve folk medicine knowledge in the wake of increasingly standard Western biomedical practices.
Urbanicity/Income → TCM → Infectious Disease

Huang, et al. studied the determinants of the frequency of TCM prescriptions for treating peptic ulcer disease, a common infectious disease, in Taiwan (2015). Using data from the National Health Insurance Database between 2001 and 2010, the researchers found that of recently diagnosed patients, around 15% used traditional Chinese medicine (TCM) to treat their symptoms. Interestingly, females and younger patients living in very urban areas were the most likely to use TCM, which further supports prior findings of the correlation between higher urbanicity and greater likelihood of folk medicine use. Furthermore, those who used TCM for their peptic ulcer disease were less likely to be afflicted with other infectious and chronic diseases, including “coronary artery disease, chronic obstructive lung disease, diabetes mellitus and liver cirrhosis and stroke” (Huang, et al., 2015, 311). This suggests that folk medicines might have protective factors from various illnesses that biomedical practices lack.

One final highlight of the study was the delay the researchers found in using TCM. On average, TCM users waited almost 5 months after initial diagnosis before consulting a TCM clinic (Huang, et al., 2015, 314). This finding is similar to Huang et al.’s (2015) study and further supports the implication that folk medicine, such as TCM, despite its higher prevalence in urban areas and among younger ages, is still viewed as a secondary remedy rather than the primary method to treat illness. Given that this study did not analyze if subjects consulted other biomedical options prior to seeking TCM consultation, it could be very possible that the delay in consulting TCM clinics was due to participants initially seeking biomedical treatments and resorting to folk medicine if biomedical treatments proved insufficient. Overall, Huang, et al.’s findings raise intriguing questions as to what benefits or protective factors traditional Chinese
medicine in particular, and folk medicine overall, has on health in comparison to biomedical health practices.

**Urbanicity/Income → Biomedical Preventive Care → Chronic and Infectious Disease Patterns**

Fan, et al. (2015) studied the factors influencing the use of biomedical preventive practices and healthy lifestyles in modern China. Using data from the 2006 version of the CHNS, they analyzed how biomedical preventive care and non-medical preventive lifestyle factors were related to various covariates, including age, gender, education level, urbanicity, household income level, access to health resources, and the presence or absence of medical insurance (Fan, et al., 2015, 315 – 318). Biomedical preventive care included Western biomedical health assessments, blood tests, screening for different illnesses, etc. (Fan, et al., 2015, 314-315). Non-medical preventive lifestyles factors included health assessments in alternative forms of medicine, including TCM, as well as overall lifestyle choices, such as healthy diet and physical activity (Fan, et al., 2015, 315).

As expected, Fan, et al.’s analyses show that biomedical preventive care has a strong positive correlation with increases in urbanicity. The relationship between urbanicity and biomedical preventive care use is so strong that the researchers found a 102% increase in likelihood of using medical preventive care if individuals reported living in more urban areas (Fan, et al., 2015, 320). The authors attribute this finding with the large urban-rural gap in China (see the 1b on urbanicity and health). Furthermore, they found that high income levels compared to moderate income levels did not significantly increase the likelihood of using biomedical preventive care resources. However, individuals in the lowest income strata (and far under the absolute poverty line of the World Bank) would have a significantly greater likelihood of using biomedical preventive resources if their income levels were raised to that of the middle income
strata. Findings regarding the non-medical preventive lifestyle practices were similar to the findings regarding biomedical preventive resource use. These results suggest that upward socioeconomic mobility in urban areas should increase preventive biomedicine use and that income has key stratifying effects on access to biomedicine in urban centers.

Huang, et al. (2016) expand on the determinants of inequalities in access to preventive care resources in China. Using 2011 data from the CHNS, the researchers found that the individuals that used preventive care services and had general physical assessments more frequently were those who were in the higher income levels, had attended a university or higher education, had gotten sick within the last month, had a chronic illness, and who lived in more eastern, urban areas (Huang, et al., 2016, 4). Interestingly, less than 10% of participants used preventive care services out of the overall participant pool, indicating relatively low use of preventive practices in general (Huang, et al., 2016, 7). However, of those respondents, no significant difference in preventive care use was found between urban and rural participants (Huang, et al., 2016, 9). This is in stark contrast to Fan, et al.’s analyses on data from 2006 that showed significant differences in preventive care use between urban and rural areas, suggesting that the large urban-rural gap that Fan, et al. had implicated for their results had actually improved over the following years, as shown by Huang, et al.’s 2011 analyses. Rather, Huang, et al. attribute socioeconomic status, as measured by income and education level, as more significant factors in the decision to use preventive care resources (2016, 7).

**Methods**

This study used data obtained from the 2011 China Health and Nutrition Survey (CHNS). The survey, initially administered in 1989 with follow up waves every 2, 3, or 4 years since, examines patterns in public health, health outcomes, and related socioeconomic and
demographic influences among individual participants, family units, and communities (Popkins, et al., 2010, 1436). Participants surveyed with the 2011 version were sampled across nine provinces (Liaoning, Heilongjiang, Jiangsu, Shandong, Henan, Hubei, Hunan, Guangxi, and Guizhou) in a multistage, random cluster design. This ensured diversity in demographic and socioeconomic characteristics of the study population.

The current study looked at the relationship between socioeconomic factors and health outcomes as mediated by biomedical preventive care and folk medicine. Socioeconomic factors were measured by income per capita (both on a continuous and a categorical scale). Urbanicity, defined as a dichotomous variable where suburban and rural communities were categorized as “rural” as opposed to cities, towns, and county capital cities categorized as “urban”. Health was measured by variables that captured prevalence of symptoms characteristic of infectious and chronic disease. Biomedical preventive care was assessed by asking subjects if they had sought any preventive health resources within the past month. This included routine health and eye assessments as well as cancer screenings, blood tests, and blood pressure measurements. Folk medicine was assessed by asking subjects if they visited folk doctors at all in the previous year. Additionally, the continuous variable of age and the categorical variable of gender were included as covariates in all models tested.

Creation of the Categorical Income Variable

Income was analyzed both along a continuum as well as in categories. Specifically, the continuous variable of income per capita was categorized into tertiles that were defined in the following manner:

Income Level 0: X < 6,335.98 yuan
Income Level 1: 6,335.98 yuan < X < 14,521.88 yuan
Creation of the Infectious and Chronic Disease Variables

Respondents were presented with various infectious and chronic disease symptoms and asked to identify if they had recently experienced these symptoms. The current study selected from these symptoms in order to more generally assess infectious and chronic disease patterns. The infectious disease group included respondents who recently experienced diarrhea, fever, coughing, sore throat, and other infectious disease symptoms or diagnose. The chronic disease group consisted of respondents who recently experienced asthma, heart disease, and any symptoms or diagnoses of a noncommunicable disease.

Creation of the Disease Type Variables

Disease type variables were created from the infectious and chronic disease symptom variables in order to test both groups to each other in the medical system mediational framework and the disease prevention mediational framework. Disease type variables were defined in the following manner:

Disease type 0: only infectious disease symptoms

Disease type 1: only chronic disease symptoms

Disease type 2: both infectious and chronic disease symptoms

Results

Descriptive Statistics for Demographic and Primary Study Variables

The following table shows descriptive statistics for demographic variables of gender and age with the primary study variables of income, urbanicity, biomedical preventive care, folk medicine, infectious disease symptoms, and chronic disease symptoms (Table 1).
Table 1: General Sample Descriptives

The general sample consisted of 23,060 individuals. The current study sample was limited to 15,069 individuals who completed the symptom recall portion of the CHNS. This sample consisted of slightly more females (52.12%) than males (47.88%), with an average age of 40.66 years. Additionally, rural respondents were almost twice the amount (65.07%) as urban respondents (34.93%), and the average income in the general sample was 13,490.02 yuan ($SD = 16,004.84$ yuan). This study was approved with the IRB.

Overall, prevalence of infectious and chronic disease were low across the study sites. As expected, infectious disease symptoms were more common in rural areas while chronic disease symptoms were more common in urban areas, and those with higher incomes seemed to have a higher prevalence of chronic disease symptoms than those with lower incomes. Relatively younger participants seemed to be afflicted by infectious disease symptoms whereas older participants experienced more chronic disease symptoms. Interestingly, females were the predominant group to suffer from both infectious and chronic disease symptoms. Finally, individuals not afflicted with infectious or chronic disease symptoms seemed to be using biomedical preventive and folk medicine far more than individuals who expressed infectious or chronic disease symptomology. Furthermore, rates of preventive and folk medicine use did not
differ among individuals expressing infectious disease symptoms, but chronic disease sufferers seemed to use biomedical preventive resources slightly more than folk medicine.

Correlations and $T$-tests between Demographic and Primary Study Variables

The following tables show the relationships between demographic and primary study variables (Tables 2 and 3).

<table>
<thead>
<tr>
<th>Measure (Pearson chi2, p-value)</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Urbanicity</td>
<td>-</td>
<td>.0685, .794</td>
<td>104.1, 0.000</td>
<td>99.91, 0.000</td>
<td>1.160, 0.282</td>
<td>80.41, 0.000</td>
</tr>
<tr>
<td>2. Gender</td>
<td>-</td>
<td>3.177, 0.075</td>
<td>4.214, 0.040</td>
<td>7.377, 0.007</td>
<td>4.358, 0.037</td>
<td></td>
</tr>
<tr>
<td>3. Preventive Care</td>
<td>-</td>
<td>3.36, 0.000</td>
<td>145.0, 0.000</td>
<td>204.4, 0.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Folk Medicine</td>
<td>-</td>
<td>77.49, 0.000</td>
<td>27.68, 0.000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Infectious Disease</td>
<td>-</td>
<td>57.00, 0.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Chronic Disease</td>
<td>-</td>
<td></td>
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</tbody>
</table>

Table 2: Bivariate Associations between Demographic and Primary Study Variables

<table>
<thead>
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</tr>
</thead>
<tbody>
<tr>
<td>1. Income</td>
<td>t(22651) = 2.617, p = 0.009</td>
<td>t(22651) = -25.21, p = 0.000</td>
<td>t(15405) = -8.237, p = 0.000</td>
<td>t(15401) = 6.184, p = 0.000</td>
<td>t(15395) = 2.482, p = 0.013</td>
<td>t(15390) = -2.524, p = 0.012</td>
</tr>
<tr>
<td>2. Age</td>
<td>t(23054) = -3.307, p = 0.001</td>
<td>t(23054) = -13.95, p = 0.000</td>
<td>t(15614) = -2.565, p = 0.010</td>
<td>t(15610) = -5.023, p = 0.000</td>
<td>t(15604) = -2.298, p = 0.022</td>
<td>t(15599) = -25.91, p = 0.000</td>
</tr>
</tbody>
</table>

Table 3: $T$-tests between Demographic and Primary Study Variables

Of importance to note from these two tables is that urbanicity was not significant with infectious disease symptoms. As such, further analyses were not conducted on the following pathways:

Urbanicity $\rightarrow$ Preventive Care $\rightarrow$ Infectious Disease Symptoms

Urbanicity $\rightarrow$ Folk Medicine $\rightarrow$ Infectious Disease Symptoms

Logistic Regression Analyses and Hypotheses
The following table displays regression analyses for the hypothesized direct relationships between socioeconomic factors and health outcome in the first analytical framework.

<table>
<thead>
<tr>
<th>Path</th>
<th>Odds Ratio [Confidence Interval]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Urbanicity --&gt; Chronic Disease Symptoms</td>
<td>1.82 [1.60, 2.08]</td>
</tr>
<tr>
<td>2. Income --&gt; Infectious Disease Symptoms</td>
<td>.887 [.835, .941]</td>
</tr>
<tr>
<td>3. Income --&gt; Chronic Disease Symptoms</td>
<td>1.18 [1.09, 1.28]</td>
</tr>
</tbody>
</table>

**Table 4: Direct Effects of Regression**

Table 5 shows the regression models for each relationship hypothesized in the medical system mediational framework, and Figure 5 contextualizes the significance and directionality of the relationships in this framework.

![Diagram: Medical System Mediational Framework with Directionality and Significance of Relationships](image)

**Fig. 5: Medical System Mediational Framework with Directionality and Significance of Relationships**

Note: circled signs indicate significant relationships. Additionally, analyses of income were conducted relative to the lowest income strata (level 0). Finally, red signs indicate the
inclusion of urbanicity in the regression models whereas green signs indicate the inclusion of income in the regression models.

<table>
<thead>
<tr>
<th>Path</th>
<th>Variables</th>
<th>Odds Ratio [Confidence Interval]</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Income --&gt; Biomedical Preventive Care/Folk Medicine --&gt; Infectious Disease</strong></td>
<td>Income (Level 1) 0.82 [0.73, 0.93]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Income (Level 2) 0.78 [0.69, 0.88]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Biomedical Preventive Care 2.47 [2.13, 2.86]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Folk Medicine 2.17 [1.79, 2.64]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Age (control) 0.996 [0.994, 0.999]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Gender (control) 1.12 [1.02, 1.24]</td>
<td></td>
</tr>
<tr>
<td><strong>Income --&gt; Biomedical Preventive Care/Folk Medicine --&gt; Chronic Disease</strong></td>
<td>Income (Level 1) 1.03 [0.86, 1.25]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Income (Level 2) 1.27 [1.07, 1.51]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Biomedical Preventive Care 3.03 [2.51, 3.66]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Folk Medicine 1.71 [1.30, 2.25]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Age (control) 1.05 [1.05, 1.06]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Gender (control) 1.09 [0.95, 1.25]</td>
<td></td>
</tr>
<tr>
<td><strong>Urbanicity --&gt; Biomedical Preventive Care/Folk Medicine --&gt; Chronic Disease</strong></td>
<td>Urbanicity 1.71 [1.49, 1.97]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Biomedical Preventive Care 2.91 [2.41, 3.51]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Folk Medicine 1.86 [1.42, 2.45]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Age (control) 1.05 [1.05, 1.06]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Gender (control) 1.10 [0.95, 1.26]</td>
<td></td>
</tr>
</tbody>
</table>

**Table 5: Mediational Effects in the Medical System Mediational Framework**

Table 5 and Figure 5 show that both income levels 1 and 2 were significantly positively associated with infectious disease prevalence relative to income level 0. In contrast, income level 1 was insignificantly related to chronic disease relative to income level 0 while income level 2 was positively significant with chronic disease prevalence relative to income level 0. Interestingly, results showed that while urbanicity may not be directly associated with infectious disease prevalence, access to and use of biomedical preventive care and folk medicine are still
significantly associated with infectious disease even when urbanicity is accounted for in the regression models (see Figure 5 for a clearer representation of this observation). Note: no significant interaction between independent and mediating variables was found to effect disease prevalence. Interestingly, gender was a significant demographic covariate only for the model testing the relationship between income, preventive care and folk medicine, and chronic disease. In contrast, age was a significant demographic covariate for all regression models tested in the medical system mediational framework.

Table 6 shows the mediational regression models for the disease prevention mediational framework, and Figure 6 contextualizes the significance and directionality of the relationships in this framework.

Fig. 6: Disease Prevention Mediational Framework with Directionality and Significance of Relationships
Note: circled signs indicate significant relationships. Additionally, red signs indicate the inclusion of urbanicity in the regression models whereas green signs indicate the inclusion of income in the regression models.

<table>
<thead>
<tr>
<th>Path</th>
<th>Variable</th>
<th>Odds Ratio [Confidence Interval]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Income --&gt; Infectious/Chronic Disease --&gt; Biomedical Preventive Care</td>
<td>Income (Level 1)</td>
<td>1.34 [1.12, 1.60]</td>
</tr>
<tr>
<td></td>
<td>Income (Level 2)</td>
<td>2.19 [1.86, 2.59]</td>
</tr>
<tr>
<td></td>
<td>Infectious Disease</td>
<td>2.34 [2.02, 2.72]</td>
</tr>
<tr>
<td></td>
<td>Chronic Disease</td>
<td>3.07 [2.54, 3.70]</td>
</tr>
<tr>
<td></td>
<td>Age (control)</td>
<td>1.00 [0.99, 1.00]</td>
</tr>
<tr>
<td></td>
<td>Gender (control)</td>
<td>1.10 [0.98, 1.25]</td>
</tr>
<tr>
<td>Income --&gt; Infectious/Chronic Disease --&gt; Folk Medicine</td>
<td>Income (Level 1)</td>
<td>0.60 [0.50, 0.73]</td>
</tr>
<tr>
<td></td>
<td>Income (Level 2)</td>
<td>0.39 [0.32, 0.47]</td>
</tr>
<tr>
<td></td>
<td>Infectious Disease</td>
<td>2.14 [1.76, 2.60]</td>
</tr>
<tr>
<td></td>
<td>Chronic Disease</td>
<td>1.63 [1.24, 2.13]</td>
</tr>
<tr>
<td></td>
<td>Age (control)</td>
<td>1.01 [1.00, 1.01]</td>
</tr>
<tr>
<td></td>
<td>Gender (control)</td>
<td>1.12 [0.95, 1.32]</td>
</tr>
<tr>
<td>Urbanicity --&gt; Infectious/Chronic Disease --&gt; Biomedical Preventive Care</td>
<td>Urbanicity</td>
<td>1.78 [1.57, 2.01]</td>
</tr>
<tr>
<td></td>
<td>Infectious Disease</td>
<td>2.25 [1.94, 2.62]</td>
</tr>
<tr>
<td></td>
<td>Chronic Disease</td>
<td>2.94 [2.44, 3.54]</td>
</tr>
<tr>
<td></td>
<td>Age (control)</td>
<td>1.00 [0.99, 1.00]</td>
</tr>
<tr>
<td></td>
<td>Gender (control)</td>
<td>1.08 [0.95, 1.22]</td>
</tr>
<tr>
<td>Urbanicity --&gt; Infectious/Chronic Disease --&gt; Folk Medicine</td>
<td>Urbanicity</td>
<td>0.37 [0.31, 0.45]</td>
</tr>
<tr>
<td></td>
<td>Infectious Disease</td>
<td>2.23 [1.84, 2.71]</td>
</tr>
<tr>
<td></td>
<td>Chronic Disease</td>
<td>1.81 [1.38, 2.37]</td>
</tr>
<tr>
<td></td>
<td>Age (control)</td>
<td>1.01 [1.00, 1.01]</td>
</tr>
<tr>
<td></td>
<td>Gender (control)</td>
<td>1.15 [0.98, 1.35]</td>
</tr>
</tbody>
</table>

Table 6: Mediation Effects in the Disease Prevention Mediation Framework

Table 6 and Figure 6 show the same phenomenon noted in Table 5 and Figure 5 where infectious disease maintains significance with access to and use of biomedical preventive care and folk medicine despite inclusion of urbanicity in the regression model, which is
insignificantly related to infectious disease prevalence. Also note the lack of interactions between independent (infectious versus chronic disease prevalence) and indirect (income versus urbanicity) variables on the access to and use of biomedical preventive care and folk medicine. Interestingly, gender is not a significant demographic covariate for any of the relationships tested in the disease prevention mediational framework. In contrast, age is a significant demographic covariate for the models testing the relationships between income, urbanicity, disease, and folk medicine.

Table 7 shows the mediational regression models for the medical system mediational framework when subjects symptomatic of infectious and chronic disease were compared with each other rather than the general sample (Figure 3 reproduced below).

![Fig. 3: Medical System Mediational Framework when Infectious and Chronic Disease Groups Compared to Each Other](image)

<table>
<thead>
<tr>
<th>Path</th>
<th>Variables</th>
<th>Odds Ratio [Confidence Interval]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Income --&gt; Biomedical Preventive Care/Folk Medicine --&gt; Disease Type</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 7: Mediational Effects in the Medical System Mediational Framework Testing

Infectious and Chronic Disease Groups to Each Other

Finally, Table 8 shows the regression models for the disease prevention mediational framework when infectious and chronic disease groups were compared to each other rather than the general sample, and Figure 8 shows the significant interaction in this framework.
Fig. 7: Disease Prevention Mediational Framework when Infectious and Chronic Disease Groups Compared to Each Other with Significant Interaction

Note: The significant interaction observed is denoted by starred lines.

<table>
<thead>
<tr>
<th>Path</th>
<th>Variables</th>
<th>Odds Ratio [Confidence Interval]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Income --&gt; Diseasetype --&gt; Biomedical Preventive Care</td>
<td>Income (Level 1)</td>
<td>1.26 [0.94, 1.71]</td>
</tr>
<tr>
<td></td>
<td>Income (Level 2)</td>
<td>1.91 [1.45, 2.51]</td>
</tr>
<tr>
<td></td>
<td>Diseasetype (Level 1)</td>
<td>1.32 [1.02, 1.71]</td>
</tr>
<tr>
<td></td>
<td>Diseasetype (Level 2)</td>
<td>1.78 [1.21, 2.61]</td>
</tr>
<tr>
<td></td>
<td>Age (control)</td>
<td>1.00 [0.81, 1.24]</td>
</tr>
<tr>
<td></td>
<td>Gender (control)</td>
<td>0.10 [0.06, 0.16]</td>
</tr>
<tr>
<td>Urbanicity --&gt; Diseasetype --&gt; Biomedical Preventive Care</td>
<td>Urbanicity</td>
<td>1.83 [1.47, 2.27]</td>
</tr>
<tr>
<td></td>
<td>Diseasetype (Level 1)</td>
<td>1.32 [1.02, 1.71]</td>
</tr>
<tr>
<td></td>
<td>Diseasetype (Level 2)</td>
<td>1.77 [1.20, 2.60]</td>
</tr>
<tr>
<td></td>
<td>Age (control)</td>
<td>1.00 [0.996, 1.01]</td>
</tr>
<tr>
<td></td>
<td>Gender (control)</td>
<td>0.99 [0.80, 1.23]</td>
</tr>
<tr>
<td>Income --&gt; Diseasetype --&gt; Folk Medicine</td>
<td>Income (Level 1)</td>
<td>0.56 [0.40, 0.80]</td>
</tr>
<tr>
<td></td>
<td>Income (Level 2)</td>
<td>0.33 [0.22, 0.48]</td>
</tr>
<tr>
<td></td>
<td>Diseasetype (Level 1)</td>
<td>0.80 [0.55, 1.17]</td>
</tr>
<tr>
<td></td>
<td>Diseasetype (Level 2)</td>
<td>1.76 [1.07, 2.89]</td>
</tr>
<tr>
<td></td>
<td>Age (control)</td>
<td>1.01 [0.999, 1.01]</td>
</tr>
<tr>
<td></td>
<td>Gender (control)</td>
<td>1.11 [0.82, 1.51]</td>
</tr>
<tr>
<td>Only Significant Interaction: Diseasetype (Level 2) + Income (Level 1) on Folk Medicine Use</td>
<td></td>
<td>3.37 [1.12, 10.2]</td>
</tr>
<tr>
<td>Urbanicity --&gt; Diseasetype --&gt; Folk Medicine</td>
<td>Urbanicity</td>
<td>0.37 [0.27, 0.52]</td>
</tr>
<tr>
<td></td>
<td>Diseasetype (Level 1)</td>
<td>0.84 [0.58, 1.23]</td>
</tr>
<tr>
<td></td>
<td>Diseasetype (Level 2)</td>
<td>1.80 [1.10, 2.96]</td>
</tr>
<tr>
<td></td>
<td>Age (control)</td>
<td>1.01 [0.999, 1.014]</td>
</tr>
</tbody>
</table>
Table 8: Mediational Effects in the Disease Prevention Mediational Framework Testing

Infectious and Chronic Disease Groups to Each Other

Note: Analyses of income were relative to the lowest income strata (level 0) and analyses of disease-type were relative to infectious disease prevalence only.

Table 8 showed disease-type 1 (chronic disease only) to be positively associated with biomedical preventive care (relative to disease-type 0, infectious-disease only) across income levels 1 and 2 (relative to income level 0) and across urbanicity levels. However, disease-type 1 was negatively insignificant with folk medicine access and use, regardless of urbanicity or income level. In contrast, disease-type 2 (infectious and chronic disease) was positively associated with both biomedical preventive care and folk medicine use for when urbanicity and income levels were included in regression models. Most importantly, a significant interaction between disease-type 2 and income level 1 was found to significantly affect folk medicine use (the starred lines in Figure 7 indicate the variables involved in the interaction observed). Interestingly, age does not seem to be a significant demographic covariate for any of the relationships in the disease prevention mediational framework when infectious and chronic disease groups are tested to each other. In contrast, gender is a significant demographic covariate only for the first regression model in Table 8 testing the relationship between income, disease-type, and biomedical preventive care access and use.

Hypothesis 1: The General Prevalence of Biomedicine Usage

Descriptive statistics partially support Hypothesis 1. In the general sample, biomedical preventive resources were used almost twice as much as TCM (1,158 individuals used preventive resources versus 651 individuals used TCM). Moreover, this observation of greater use of biomedical preventive resources was seen across disease types: among those expressing
infectious disease symptoms, 270 individuals used preventive resources whereas 151 individuals used TCM, and among those expressing chronic disease symptoms, 181 individuals used preventive resources while 70 used TCM. Preventive care was also used slightly more frequently among urban dweller than rural subjects (Nurban = 645, Nrural = 513) and by those with higher income levels. As such, these statistics indicate that biomedical preventive care use may be more common than folk medicine across health conditions and urbanicity, but is stratified by income levels. What is interesting to note is that despite these observations, biomedical preventive care use overall was minimal, consisting of only 7.41% of the general sample (refer to Table 1 for all statistics). Thus, although these results show that biomedicine is the preferred medical system in modern China, other aspects of biomedicine besides preventive care should be analyzed to more conclusively support this claim.

Interestingly, this greater prevalence of biomedical preventive care use seen in Table 1 significantly influenced many of the models in the medical system mediational framework (Table 5, Fig. 5). In fact, biomedical preventive care significantly influenced the relationship between income and infectious disease (2.47 [2.13, 2.86]), income and chronic disease (3.03 [2.51, 3.66]), and urbanicity and chronic disease (2.91 [2.41, 3.51]). Biomedical preventive care’s significance remained despite the inclusion of the mediating factor of folk medicine and the covariates of age and gender in the regression models.

When the medical system mediational framework was re-tested to compare infectious and chronic disease groups to each other rather than the general sample, biomedical preventive care was still a significant mediator between income and urbanicity and disease type (see Table 7). Significance remained when age and gender covariates were included in the model.
In the disease prevention mediational framework, when biomedical preventive care was the outcome influenced by socioeconomic factors and health outcome (Figure 6), both the indirect variables of income and urbanicity as well as the direct independent variables of infectious and chronic disease prevalence were found to be significantly associated with preventive care (see Table 6). This was true even when covariates of age and gender were included in the regression models.

Interestingly, when the disease prevention mediational framework was re-tested to compare infectious and chronic disease groups to each other, income's significance in association to preventive care partially went away. Lower income strata were not found to be significantly associated with preventive care (1.26 [0.94, 1.71]) whereas higher income strata retained their significance as influencers of preventive care use (1.91 [1.45, 2.51]). Urbanicity retained an indirect significant association with biomedical preventive care use and disease type was observed to significantly and directly affect preventive care use (see Table 8). These findings included age and gender as covariates in the models.

**Hypothesis 2: Chronic Disease, Urban Poor, and TCM**

In Table 1, we observe that those exhibiting chronic disease symptoms have higher incomes ($M = 16,011.34$ yuan, $SD = 14,685.17$ yuan), are more likely to live in urban areas (55.47%) than rural areas (44.53%), are of older ages ($M = 60.97$ years, $SD = 13.22$ years), more likely female (55.26%), and are more likely to use preventive care (19.23%) than TCM (7.48%). Thus, descriptive statistics provide an initial support for Hypothesis 2 that urban poor chronic disease patients will be more likely to use TCM.

However, when regression analyses were conducted for the medical system mediational framework, no significant interactions were found between urbanicity, income, folk medicine, or
biomedical preventive care (see Table 5). A similar lack of significant interaction was seen among these variables when both the disease prevention mediational framework was tested and when medical system mediational framework was retested to compare infectious and chronic disease groups to each other. Interestingly, a significant interaction between income and disease type on TCM use was found when the disease prevention mediational framework was retested to compare infectious and chronic disease groups to each other (3.37 [1.12, 10.2]). Figure 8 shows this interaction between disease type and income on TCM use.

![Predictive Margins with 95% CIs](image)

**Fig. 8: Interactions between Income and Disease Type in Influencing TCM Use**

This figure shows that among respondents who suffered from either infectious (diseasetype 0) or chronic disease (diseasetype 1), income was not a highly significant factor in folk medicine use. The only major observation from these groups is that respondents suffering
from either infectious or chronic disease that were in the lowest income strata (income level 0) were slightly more likely to use TCM than respondents of either disease type group in higher income strata. The highly significant distinction in TCM use is seen in respondents suffering from both infectious and chronic disease symptoms (diseasetype 2), where those in the highest income strata (income level 2) were the least likely to use folk medicine, those in the lowest income strata (income level 0) were moderately likely to use folk medicine, and those in the middle income strata (income level 1) were the most likely to use folk medicine. As such, Hypothesis 2 was partially supported in that chronic disease patients who are in lower income strata are more likely to use TCM than chronic disease patients in higher income strata. However, this hypothesis was partially unsupported given that no significant interactions were seen between folk medicine use and urbanicity.

**Hypothesis 3: Infectious Disease, Urban Poor, and TCM**

In Table 1, we observe that those exhibiting infectious disease symptoms have lower incomes ($M = 13,872.05$ yuan, $SD = 14,334.46$ yuan), are more likely to live in rural areas (57.35%) than urban areas (42.65%), are of younger ages ($M = 42.84$ years, $SD = 23.77$ years), more likely female (54.88%), and are more likely to use biomedical preventive care (14.18%) than TCM (7.96%). In contrast, those exhibiting chronic disease symptoms have higher incomes ($M = 16,011.34$ yuan, $SD = 14,685.17$ yuan), are more likely to live in urban areas (55.47%) than rural areas (44.53%), are of older ages ($M = 60.97$ years, $SD = 13.22$ years), more likely female (55.26%), and are more likely to use preventive care (19.23%) than TCM (7.48%). Thus, initial descriptive statistics do not suggest any support for Hypothesis 3.

Indeed, no significant interaction was found between income, urbanicity, or folk medicine when regression models were run for the medical system mediational framework, the
disease prevention mediational framework, or the retesting of the medical system mediational framework to compare infectious and chronic disease groups to each other. However, as mentioned above, a significant interaction was seen between income and disease type on TCM use (see Figure 8). As such, Hypothesis 3 is slightly supported by the significant interaction between disease type of and income on folk medicine. However, for the most part, given no significant interaction between urbanicity and TCM use and no clear distinction in the interaction found between respondents symptomatic of chronic and infectious disease in the use of TCM, this hypothesis is mostly unsupported.

**Discussion**

This study examined the possibility of biomedical preventive care and folk medicine as accounting for variations in the relationship between socioeconomic factors and health outcomes. Overall, the results of this study showed that while biomedical preventive care and folk medicine were significant mediators of the relationship between socioeconomic factors and health patterns, neither mediators significantly interacted with urbanicity or income in influencing disease symptom prevalence in China. This suggests that use of biomedical preventive resources and TCM in addressing health concerns is not necessarily constrained by one’s income or whether one lives in more urban versus rural areas.

From the discussion of the main findings, we determined that the first hypothesis was supported by the current study. Recall that the first hypothesis suggested that biomedicine, as represented by preventive care, would be the preferred medical system regardless of health outcome or socioeconomic factors. Indeed, a greater use of biomedical preventive care was seen in the general sample (Table 1) and preventive care remained an important factor across income, urbanicity, and disease type. This supports prior research suggesting an association between
access and use of biomedical preventive care with income and urbanicity (Fan, et al., 2015; Huang, et al., 2016). What is interesting is that no significant interaction was seen between preventive care and these socioeconomic factors in their effects on health outcomes. This implies that the medical system mediational framework’s suggestion of income and urbanicity acting through access to biomedicine and folk medicine to affect health may not be the correct framework to assess infectious and chronic disease prevalence in China.

In contrast, the second and third hypotheses were mostly unsupported. Recall that the second hypothesis suggested that within respondents symptomatic of chronic disease, those in more urban areas and in lower income strata would be most likely to use TCM as compared to biomedicine. The third hypothesis suggested that those in more urban areas and in lower income strata would use TCM more than biomedicine to treat infectious disease symptoms, but to a lesser degree than for treating chronic disease symptoms. Both hypotheses were unsupported in that rural residents rather than urban residents showed a greater use of TCM (Table 1). Although partial support for these hypotheses emerged from the observance that those in lower income levels were shown to use TCM more than those in higher income levels, this pattern was most prevalent among subjects exhibiting both infectious and chronic disease rather than just chronic or infectious disease patients, which does not support either of these hypotheses. In short, these hypothesis were mostly unsupported given that subjects in more rural regions who exhibited both chronic and infectious disease and were in lower income levels were most likely to use TCM. These results provide a contrast to prior research suggesting that the urban poor are most likely to use TCM to treat chronic and infectious disease symptoms (Chen, et al., 2015; Huang, et al., 2015; Huang, et al., 2015).
Recall that greater female representation was observed among respondents in the general sample as well as among disease groups. Explanations for this phenomenon include the possibility that females may be more likely to seek medical advice to treat disease symptoms or may be more proactive in preventing illness from developing as compared to males. Another possibility could be that females may report having experienced illness more than males. Additionally, females may live longer than males and thus may be more likely to express chronic disease symptoms as compared to men.

Discussion of limitations and suggestions for future research can contextualize these findings. In particular, it should be noted that the skewed demographic distribution of greater female representation among disease groups may have resulted from the skewed demographic representation of more female respondents in the overall sample. Thus, future studies should attempt to obtain a more equal representation of male and female respondents in the general sample in order to avoid biasing demographic distributions of individual target variables in the study. Another limitation is that mega-cities were not included among the study sites, which suggests that results related to urbanicity might have been different had these highly urban centers been included in addition to the more moderate industrial urban centers analyzed. As such, future studies should attempt to include respondents from mega-cities so that analyses of rates of biomedical preventive care use, TCM use, and health outcomes can be applied to these highly urban areas. Another limitation is that the epidemiological nature of this study prevented any contextualization of the results regarding subjects’ opinions of TCM versus biomedicine. Thus, future studies should attempt to conduct more ethnographic research to complement and further contextualize the results of this study by providing information on the cultural frameworks that shape participants’ understandings and use of both medical systems and how the
cultural frameworks. One final limitation is that the current study assumes both the medical system mediational framework and the disease prevention mediational framework to be mutually exclusive. However, over the course of the research, it was found that both models are actually mutually related in that bidirectional feedback rather than rigid unidirectional relationships between the variables in both models is possible. As such, future studies should consider conducting more exploratory research that allows both models to interact rather than be completely separate from one another and that allows causal and mediational relationships to be bidirectional rather than unidirectional.
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