Published in final edited form as:

J Aging Health. 2016 June ; 28(4): 675–703. doi:10.1177/0898264315609906.

Tourism Experiences and Self-Rated Health Among Older Adults in China

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Abstract

Objective—To investigate factors associated with tourism experiences, and the association between tourism experiences and subsequent self-rated health.

Method—Multilevel logistic regression models and four waves of panel data from a large nationally representative survey of older adults in China were employed.

Results—Those who had a tourism experience tended to be younger, men, urban residents, have a higher socioeconomic status (SES), and frequently participate in leisure activities and exercise. However, controlling for SES, women were more likely than men to have a tourism experience. Notably, tourism was negatively associated with poor self-rated health and the association was robust to adjustments for a wide range of confounders.

Discussion—The net beneficial impact of tourism on self-rated health may operate through several mechanisms such as improvements in tourists' cognitive functioning, healthy lifestyles,

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Authors' Note

The views expressed in this article are solely those of the authors and do not necessarily reflect those of the United Nations, Virginia Polytechnic Institute and State University, Vanderbilt University, Duke University, Durham Veteran Affairs Medical Center, and Peking University.

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

self-esteem, family and social relations, and psychological and spiritual well-being. Tourism participation is an effective way to promote healthy aging.

Keywords

tourism; tourism experience; self-rated health; older adults; China

Introduction

In the context of rapid population aging, behaviors such as smoking, alcohol consumption, eating habits, and tourism have become increasingly important factors in shaping health, mortality, and longevity among older adults (e.g., Gibson, 2002; Schröder & Widmann, 2007; Stanner, Thompson, & Buttriss, 2009). In spite of this recognition, tourism or leisure travel¹ has not received sufficient attention in aging research (Ferrer, Sanz, Ferrandis, McCabe, & Garcia, 2015; Sedgley, Pritchard, & Morgan, 2011). Because older adults tend to have more spare time and are less likely to be tied to work schedules than younger adults, there is an increasing trend among the older adult population to take advantage of traveling and sightseeing opportunities (Hsu, Cai, & Wong, 2007; Javalgi, Thomas, & Rao, 1992).

To date, only a handful of studies have investigated the impact of tourism experiences on mental and physical health—including self-rated health (e.g., Ferrer et al., 2015; Ferri, Durá, & Garcés, 2013; Hunter-Jones, & Blackburn, 2007; Kim, Woo, & Uysal, 2015; McConkey & McCullough, 2006; Milman, 1998). Although these studies have provided valuable insights into the potentially positive effects of tourism on various health outcomes, most of them have relied on comparisons of the health of tourists' pre- and posttourism experience and have very rarely used population-based samples to examine whether senior tourists are healthier after a tour than nontourists, net of relevant sociodemographic factors. Another limitation of extant studies is that they typically have not taken competing activities (such as daily exercise and leisure activities) or prior health status into account when estimating the effect of tourism participation on health. Consequently, it remains unclear whether the health benefits of tourism are mediated by other activities or whether tourism experiences have a direct effect on health, net of competing activities and other confounding factors. Furthermore, we are not aware of any studies that have examined the impact of tourism experiences on self-rated health among the oldest old (i.e., aged 80 years or older) who represent ideal subjects in aging studies (Zeng, Poston, Vlosky, & Gu, 2008). In addition, previous studies have not examined the association between tourism experiences and self-rated health using multiwave longitudinal studies, which facilitate the investigation of the episodic and longer term health dynamics. As noted in the literature (Kroesen & Handy, 2014), the association between tourism participation and health may be bidirectional; that is, healthier people are more likely to participate in tourism, and tourism participation improves health (Kroesen & Handy, 2014). Thus, longitudinal designs are better suited than cross-sectional designs for determining the *effects* of tourism on health.

¹In this study, we use the term *tourism* instead of *leisure travel*, though these concepts are very similar (Carr, 2002).

This study aims to fill gaps in the literature by using four waves from the Chinese Longitudinal Healthy Longevity Survey (CLHLS) to examine the factors associated with tourism participation, and how tourism affects subsequent self-rated health among the older adults in China. Research on the behaviors and health of older Chinese adults is particularly important as China has one of the largest older adult populations in the world and is experiencing rapid population aging (United Nations Population Division, 2015). Furthermore, this study has implications for healthy aging, highlighting the importance of improving the functional abilities and quality of life of older adults, and ultimately improving the efficiency of the social and health system of a nation (Ferrer et al., 2015; World Health Organization [WHO], 1997). Below, we provide reviews of the literature on factors associated with tourism experiences and the links between tourism experiences and health, and present basic information on tourism participation among Chinese older adults, followed by a description of the data and method used in this study. We then present major findings from our analyses, discuss these findings, and suggest policy implications.

Factors Associated With Tourism Experiences

Many studies on tourism and aging have addressed tourism behaviors (e.g., motivations, experiences, expenditure patterns, accommodation, destination choice, and security concerns), characteristics of senior tourists, and factors that constrain tourism (Cleaver & Muller, 2002; Fleischer & Pizam, 2002; Hsu et al., 2007; Giuliano, Hu & Lee, 2003; Javalgi et al., 1992; Kim & Woo, 2014; S. H. Lee & Tideswell, 2005; Mathur, Sherman, & Schiffman, 1998; Milman, 1998; Smith & Sylvestre, 2001; Zimmer, Brayley, & Searle, 1995). Factors associated with tourism participation in most of these studies could be classified as either personal factors or environmental factors (Jang & Wu, 2006; Parmelee & Lawton, 1990). Personal factors considered have mainly included being an older adult with a health status that includes the capacity to make one's own decisions about tourism, and having the socioeconomic resources and motivation to carry out personal decisions. Pertinent environmental factors consist of external resources such as physical, social, and interpersonal environments that affect tourism (Ferrer et al., 2015; Smith & Sylvestre, 2001).

Findings about how both personal and environmental factors affect the likelihood of tourism participation across studies are generally consistent. For instance, older age and limited mobility are factors that decrease the likelihood of engaging in tourism; higher socioeconomic status (SES) increases the likelihood of tourism participation (Zimmer et al., 1995). Men are more likely to engage in tourism than women; ethnic minorities are less likely to participate in tourism perhaps due to functional limitations, lack of affordability, and/or cultural values (Rosenbloom, 2006). Education, income, and occupation are independent predictors for tourism participation (Kelly, 1999; Patterson, 2006; Zimmer et al., 1995). In addition, reduced access to local residential and service environments (e.g., public transit services, distance to destination) likely constrain tourism participation (Handy, 1993; Hanson & Schwab, 1987; Giuliano, Hu & Lee, 2003; Rosenbloom, 2006; Smith & Sylvestre, 2001), which may be especially true for older adults in nonurban areas (Smith & Sylvestre, 2001).

Tourism Experiences and Self-Rated Health

Numerous empirical studies of both nonsenior and senior tourists have provided evidence of the positive impact of tourism experience on quality of life (e.g., Uysal, Perdue, & Sirgy, 2012) and health (e.g., Ferrer et al., 2015; Ferri et al., 2013; Gump & Matthews, 2000; Sirgy, Kruger, Lee, & Yu, 2011). For example, tourists tend to report an increase in perceived freedom of control and self-confidence stemming from tourism participation (Neal, Uysal, & Sirgy, 2007; Sirgy et al., 2011), which may contribute to overall life satisfaction and psychological well-being. A study on middle-aged men in the United States showed that those who frequently participated in tourism had fewer nonfatal cardiovascular events and lower risk factors for coronary heart disease than nontravelers and less frequent travelers (Gump & Matthews, 2000). In addition, a recent review of 24 studies across 12 countries showed consistent evidence of an association between active travel and lower risks of diabetes (Saunders, Green, Petticrew, Steinbach, & Roberts, 2013).

Studies focusing on senior tourists have revealed similar findings. For example, a Chilean study found a significant improvement in sociability, well-being, mood, appetite, insomnia, and osteoarthritic pain after a tourism trip among older adults (Marin et al., 2004). Wei and Milman (2002) reported a significant positive association between the level of involvement in activities during tourism and subjective well-being. Several other studies reported a positive effect from tourism experiences on health among populations who typically do not take vacations such as low-income families (Ferrer et al., 2015; McCabe, Joldersma, & Li, 2010), patients (Pols & Kroon, 2007), and individuals with disabilities (McConkey & McCullough, 2006). For instance, some social tourism programs with discounted rates targeting older adults in Chile, Portugal, and Spain identified beneficial effects of tourism on self-reported health, physical capacity, and mental and social well-being of the participants (see Ferrer et al., 2015).

Scholars have theorized about possible mechanisms underlying the link between tourism participation and subjective well-being and health (Kroesen & Handy, 2014). For example, consistent with the activity theory, which posits that engagement in meaningful activity is linked to life satisfaction (Lefrancois, Leclerc, & Polin, 1997), having a tourism experience is likely to contribute to senior tourists' overall quality of life and health (Gilbert & Abdullah, 2004; Kim et al., 2015). Social inclusion is another theory that is frequently used to explain the benefit of tourism participation among older adults. This theory asserts that tourism participation provides opportunities to promote social inclusion, extend limited social realms, and facilitate social interaction and networks (Morgan, Pritchard, & Sedgley, 2015). In addition, self-congruity theory contends that tourism is likely to improve well-being if there is a match between a tourist's actual and expected gains from a tourism experience (Boksberger, Dolnicar, Laesser, & Randle, 2011). Furthermore, other theories such as the effort-recovery theory, the conservation of resources theory, and the stress reliever theory also suggest that tourism participation may provide opportunities for relaxation, detachment from work, mastery experiences, and personal control that boost subjective wellness and health (see Chen, Petrick, & Shahvali, 2014). Taken all together, we expect that those who had a tourism experience will have a lower likelihood of reporting poor health compared with those who did not have such an experience.

Tourism Experiences Among Older Adults in China

Rates of tourism have grown rapidly in China. Before the economic reform in 1979, participation in tourism was very limited (Xiao, 1997). Few individuals had sufficient discretionary earnings for such a luxury; modest incomes were mostly spent on daily expenses, children's education, and buying durable products. The underdevelopment of the tourism and recreational infrastructure also restricted participation in tourism. After the economic reform, the number of Chinese taking part in tourism grew as income levels increased, and the tourism infrastructure, resources, and services were substantially developed and extended (Hu, 2002; Xiao, 1997).

The growth of tourism is more pronounced among seniors than nonseniors due to rapid improvements in health among the older Chinese population, greater available time for leisure activities among older adults, and their personal needs such as escaping routines, socializing, seeking knowledge, and nostalgia (Hsu et al., 2007). According to estimates from the published data by the China National Tourism Administration (CNTA), the annual number of older Chinese aged 65 years or older who participate in tourism is increasing, up from 8 million in 2000 (accounting for 10% of the entire older adult population) to 15 million in 2010 (accounting for 14% of the entire older adult population); however, the proportion of the tourism market shared by older adults remains less than 20% in contemporary China (CNTA, 2014), which is lower than the proportions in many developed countries where it already reached approximately 40% to 50% two decades ago (Teaff & Turpin, 1996). The average length of a tourism experience is 10 days for Chinese older adults (age 65+), which is nearly twice as long as that of young adults (age 25–44) and middle-aged adults (age 45–65); yet the average cost of a trip for Chinese older adults is 72% and 87% lower than those of these two groups, respectively (Hu, 2002). With the exception of the lower prevalence of having a tourism experience among Chinese older adults, the patterns of tourism between senior and nonseniors are generally similar to those found in developed nations (see Hossain, Bailey, & Lubulwa, 2003; Giuliano, Hu & Lee, 2003; Rosenbloom, 2006).

Data and Method

Data Sources

This study used data from the third through sixth waves of the CLHLS in 2002, 2005, 2008, and 2011. Starting in 1998, the CLHLS was conducted in a randomly selected half of the counties/cities in 22 provinces of China. The first two waves of the CLHLS in 1998 and 2000 were excluded because no data on tourism participation were collected in these two waves. Each respondent was interviewed and tracked in each subsequent wave with informed consent. Those who were lost to follow-up or died before a subsequent wave were replaced by recruiting a new sample with age and sex corresponding to those who had died or lost to follow-up. We stacked all four waves together and created a person-wave data set, which allowed us to incorporate time-varying covariates, multiple tourism events and dynamics of health, and produce more robust results with increased numbers of observations. To minimize the possible confounding effect of inability to participate in tourism due to poor health conditions, we limited our study sample to healthy older adults

who were able to perform all six activities of daily living and have a normal cognitive function with a Mini-Mental State Examination (MMSE) score greater than 18 at the time of each interview. The reason for the use of the score 18 as the cutoff point is because there is a very large proportion of illiteracy among Chinese older adults (Zhang, 2006). Our analyses also excluded respondents aged 106 years or older at their first interview because previous research showed that age reporting by Chinese older adults was generally reliable up to age 105 (Zeng & Gu, 2008). We also dropped the respondents who were lost to follow-up because we do not have their information at subsequent waves. The total valid number of respondents who were aged 65 to 105 years for the present study is 16,239 with 25,206 observations in the period from 2002 to 2011. The CLHLS 2002 wave and onward collected information on times of leisure travel beyond the home county/city in the past 2 years in addition to data on sociodemographics, family/social support, health practice, and health conditions. The detailed sampling design and data quality assessment of the CLHLS can be found in Gu (2008) and Zeng and Gu (2008).

Measurements

Tourism experience—The CLHLS asked the question at each wave, “How many times did you have any tourism experience beyond your home county/city within the past two years?” Because of the very low frequency of having two or more tourism experiences, we classified the respondents into two groups: those who had at least one tourism experience versus those who did not.

Self-rated health—For each wave, respondents were asked to rate their overall health as “very good,” “good,” “fair,” “poor,” or “very poor.” For the current study, we combined the categories of “poor” and “very poor” and combined the categories of “very good,” “good,” and “fair,” respectively. Therefore, self-rated health was dichotomized into poor/very poor (coded as 1) versus fair/good/very good (coded as 0). Several studies have shown that the self-rated health is a valid measure of health among Chinese older adults (e.g., Feng, Zhu, Zhen, & Gu, 2015). Using a dichotomous measure of self-rated health is common practice in both Western and Chinese studies (Feng et al., 2015). Furthermore, supplementary tests (not shown, but available upon request), which compared results between analyses that used dichotomous and five-category ordinal measures, indicated that results were similar, suggesting that results are robust to alternative operationalizations of self-rated health.²

Covariates—The control variables included demographic variables, SES, family/social support and connection, health behaviors, leisure activities, and prior health status.

Demographic variables considered were gender, age, residence (urban vs. rural), and ethnicity (Han vs. non-Han). *SES variables* included years of formal schooling (0 year, 1–6 years, and 7+ years), primary lifetime occupation (white-collar occupation vs. not), financial independence (yes vs. no), self-rated family financial conditions (poor, average, and good), and getting adequate medication at present (yes vs. no). *Family/social support and connection* were measured by marital status (currently married vs. not), living arrangement

²We also compared the age-sex-specific distribution of self-rated health in the Chinese Longitudinal Healthy Longevity Survey (CLHLS) with those of several other nationwide surveys on older adults in China and found that the age-sex-specific distributions were more or less similar, which suggests that the data quality of self-rated health in the CLHLS is good.

(living alone, living with spouse only, living with children and others, and living in a senior center), and number of children paying frequent visits to the respondent. The *frequent involvement of leisure activities* was a summed score of frequent participation in eight dummy leisure activities (doing housework, gardening, outdoor activities, raising poultry or pets, reading, playing cards/Mahjong, listening to the radio/watching T V, and participating in organized social activities), ranging from 0 to 8. *Health behaviors* included currently or ever smoking (yes vs. no), current alcohol use (yes vs. no), and exercising regularly (yes vs. no). Frequency of involvement in leisure activities and doing regular exercising were considered competing activities that may confound the effect of tourism participation on self-rated health. Prior health status was measured by whether respondents rated their health as poor in the survey wave preceding their tourism experience.

Method

Two sets of analyses were conducted in the present study. First, multilevel logistic regression models were used to identify factors associated with tourism participation. The employment of the multilevel approach was to adjust for intrapersonal correlation across waves. In this set of analyses, the dependent variable is a dummy variable indicating whether the respondent had a tourism experience within 2 years prior to each wave. Four sequential models were estimated for this set of analyses. Model 1 examined how demographic factors were associated with tourism experiences. Model 2 added SES factors to the base model; Model 3 further added family/social support and connection. Model 4 added leisure activity involvement and health behaviors to Model 3. The purpose of the design was to investigate how each set of factors was associated with tourism experience and how these associations changed in the presence of other covariates, including competing activities. The total number of valid individuals is 16,239 with 25,206 observations from 2002 to 2011.

For the second set of analyses, multilevel logistic regression models were used to examine how tourism participation was associated with self-rated health. The purpose of the employment of the multilevel approach was the same as noted above. Model 1 explored the association between tourism participation and self-rated health in the presence of demographic variables only. Model 2 analyzed how the association was altered in the presence of both demographic and SES variables. Model 3 examined how the association was modified by further controlling for family/social support and connection. Model 4 further investigated how the presence of other various health practices including competing activities affected the association. Model 5 examined the association between tourism participation and self-rated health while further controlling for prior health status, that is, whether respondents rated their health as poor in the survey wave preceding their tourism experience. In this set of analysis, the sample size is smaller than that in the first set of analysis because only those who survived and were thus part of the samples at subsequent waves were included. The total numbers of valid individuals and observations in this set of analysis are 11,717 and 18,579, respectively.

Although we excluded subjects who were lost to follow-up (for reasons other than death) in all three sets of analyses, supplementary analyses based on multiple imputation approaches that included respondents lost to follow-ups produced very similar results (available upon

request). Multicollinearity between covariates was also checked for both sets of analyses. The largest value of the variance inflation factor was less than 3, indicating that there were no serious issues with multicollinearity (Chatterjee, Hadi, & Price, 2000). All analyses were conducted using Stata 12.1.

Results

Table 1 presents the distribution of all study variables and the proportion of persons having at least one tourism experience in the past 2 years for these variables. Overall, around 8% of the nondisabled Chinese older adults aged 65 or older had at least one tourism experience outside of their local city/county in the 2 years preceding a survey interview. Bivariate analyses showed that the proportion of persons engaging in tourism was significantly higher among young older adults aged 65 to 79, males, urban dwellers, Han, and those with high SES. Social resources were important as well, with a higher proportion of persons participating in tourism among respondents who were married, lived with spouse only, and received three or more visits from their children. Respondents who reported exercising regularly and who reported frequent involvement in other leisure activities were also more likely to report ever having a tourism experience in the past 2 years.

Results from multilevel logistic regression models in Table 2 show that the significant associations between demographic characteristics and tourism participation (Model 1) were mildly attenuated after adjusting for SES (Model 2). Men's higher odds of having a tourism experience compared with women reversed when SES factors were included, suggesting that if men and women had equivalent SES, women would be more likely to participate in tourism. While social/family support did not have a substantial impact on the association between demographics and tourism participation and the association between SES and tourism participation (Model 3), inclusion of activities such as regular exercising and frequent participation in leisure activities did reduce the odds ratios of demographics and SES factors, and caused the odds ratio of economic independence to be insignificant (Model 4).

The results in the full model (Model 4) show that young age, female, urban residence, Han ethnicity, higher SES, higher accessibility to public health care resources, more visits from children, regular exercise, and involvement in leisure activities were all positively associated with a higher odds ratio of having at least one tourism experience. Specifically, for each additional year in age, the odds ratio of taking a sightseeing tour was reduced by 3%. Being a woman increased the odds of having a tourism experience by 24%. Older urban dwellers were 73% more likely to participate in tourism than their rural counterparts, and Han older adults were 75% more likely to have a tourism experience than their non-Han minority counterparts. Relative to having no formal education, having 7+ and 1 to 6 years of schooling increased the likelihood of tourism participation by 103% and 37%, respectively. White-collar workers were 72% more likely to have a tourism experience than non-white-collar workers. Higher accessibility to health care resources increased the likelihood of tourism participation by approximately 27%. Older adults with good and average family economic conditions were associated with 4.4 or 2 times greater odds of engaging in tourism, respectively, than those with poor family economic conditions although these odds

ratios were reduced to 3.6 and 1.8 times when other variables were all presented. Respondents living with their spouse only had similar odds of participating in tourism as those living alone. However, respondents living with children or living in a senior center had 29% and 76% higher odds of having a tourism experience than those living alone. Having one additional child paying frequent visits increased the odds of tourism participation by 3%. Regular exercise and involvement in each additional leisure activity increased the odds of tourism participation by 105% and 10%, respectively. Economic independence, marital status, and smoking and alcohol consumption behaviors were not significant predictors of tourism participation in the presence of other factors.

Table 3 summarizes the logistic regression analyses of the relationship between tourism participation and self-rated health, controlling for various covariates. In Model 1, when only demographic factors were controlled for, having a tourism experience in the past 2 years reduced the likelihood of self-rated poor health by 37%. The odds ratios were only slightly or mildly attenuated when other covariates were included (Model 2 to Model 5). Notably, the final model (Model 5) still shows that individuals having a tourism experience in the past 2 years were 20% less likely to report poor health (odds ratio = .80, $p < .01$), net of demographics, SES, family/social support, leisure activities, health behaviors, and self-rated health prior to the tourism experience. In terms of control variables, Model 5 reports that men, higher SES, living with children and others, more visits from children, alcohol consumer, and regular exercises were all associated with lower odds of reporting poor health. In particular, higher SES, especially economic independence and good family conditions, reduced the odds of reporting poor health by 31% and 23%, respectively. However, if a respondent reported poor health in last wave, he or she was more likely to rate his or her health as poor.

In addition to the results shown in Table 3, we also conducted additional analyses restricted to those urban residents who received at least 1 year of schooling and to those who were aged 80 years or older, to further examine how tourism participation affects self-rated health among the older adults with a relatively higher SES in terms of education (see Appendix A) and among the oldest-old population (Appendix B). The results show that, similar to the results in Table 3, having a tourism experience among older Chinese was associated with being less likely to report poor health in most cases. These additional findings in tandem with results presented in Table 3 strongly suggest that tourism participation has a net protective effect on self-rated health among both the general older adult population and some subpopulations such as higher SES groups and the oldest-old population, even after controlling for various confounding factors.

Discussion

The present study contributes to the literature by investigating factors associated with tourism participation and how having a tourism experience affects subsequent self-rated health by using a unique nationwide population-based longitudinal data set focusing on older adults in China. The results show that a wide array of factors distinguish tourists from nontourists among older adult Chinese. For instance, older adults with a higher SES are more likely to participate in tourism than those with a lower SES, consistent with previous

studies (Hu, 2002; Zimmer et al., 1995). Although the roles of income, occupation, and education in determining the tourism participation patterns may overlap, they are distinct. Education affects the likelihood of tourism participation via mechanisms that involve socialization and the inculcation of travel interests and skill, whereas income and occupation do not (Kelly, 1999). Low income prohibits seniors from being able to allocate the necessary financial resources that are required for tourism (J-H. Lee, Scott, & Floyd, 2001). Thus, a higher SES is positively associated with a higher likelihood of tourism participation because the personal resources enjoyed by older adults in a higher social class provide them with a wider set of opportunities (Smith & Sylvestre, 2001).

Interestingly, women are less likely than men to participate in tourism when only three demographic variables—age, residence, and ethnicity—are taken into consideration. However, after controlling for SES, women tend to be more likely to participate in tourism; this finding suggests that the gender difference in tourism is mainly due to difference in SES (see Henderson & Bialeschki, 1991; J-H. Lee et al., 2001). More research from other population-based studies is needed to further verify this finding. Minorities are less likely than Han to take leisure trips. This finding is consistent with a growing body of work showing that minorities in developed countries are often less likely to be involved in various outdoor recreations (Floyd, Shinew, McGuire, & Noe, 1994; Gramann, 1996). Minorities' lower SES, and different norms and leisure socialization patterns, contribute to ethnic disparities in leisure travel (Floyd, 1999).

Our study also finds that age and rural-urban residence play an important role in shaping the likelihood of tourism participation. In accordance with previous research (e.g., Zimmer et al., 1995), younger age of the older adults is associated with increased odds of participating in tourism. It is possible that stereotypes of older age lead some older adults to disengage from society (Kelly & Freysinger, 2000) and thus they are less likely to participate in social activities such as tourism. Also, urban older adults are more likely than their rural counterparts to participate in tourism; this finding is in line with Zimmer and colleagues' (1995) findings among older Canadians. We speculate that the urban-rural disparities lie in differences in social norms and values, consumption patterns, and availability of and accessibility to environmental and economic resources (Diao & Zhang, 2010).

A key finding of the present study is that tourism experiences are associated with lower odds of reporting poor health among the general Chinese older adult population and some subpopulations, even after controlling for demographics, SES, social support/connection, health behaviors, and leisure activities (such as smoking, alcohol consumption, regular exercise, and engagement in leisure activities) and prior health status. These findings confirm our expectation and provide empirical evidence that tourism promotes self-rated health. Provided that the process of self-assessment takes physical, psychological, and other domains of health as well as subjective well-being into account (e.g., Benyamini, Idler, Leventhal, & Leventhal, 2000; Mavaddat et al., 2011), self-rated health is not only a valid measurement of overall health conditions but also a powerful predictor for subsequent mortality (Feng et al., 2015; Jylhä, 2009). In that regard, our findings suggest that tourists do not just “feel healthier” but actually “become healthier” after participating in tourism (Chen & Petrick, 2013).

We speculate that the net beneficial impact of tourism on self-rated health may operate through several mechanisms (see reviews by Chen & Petrick, 2013; Durko & Petrick, 2013; Heintzman, 2002; Hsu et al., 2007; Iso-Ahola, 1997; Stone & Petrick, 2013). First, tourism participation may improve cognitive functioning because it provides opportunities for transformative learning experiences, including new perceptions of self-identity, skill learning and development, interpersonal communication, accruing factual knowledge, concepts, appreciation of history and culture, and experiencing different attitudes; all of those help tourists continue to learn and improve their knowledge (Pols & Kroon, 2007; Stone & Petrick, 2013).

Second, by participating in activities in the course of tourism, tourists likely maintain a certain level of exercise while enjoying sightseeing and relaxing; such activities help them stay active and maintain a healthy lifestyle (McConkey & McCullough, 2006; Petrick & Huether, 2013). More importantly, the amount of physical activities (e.g., walking) during a tourism trip, although not much in most cases, may be just sufficient for improving the health of older adults but not for younger adults because young adults tend to have more reserve capacity than older adults. As a result, tourism experiences promote physical health among older adults, consistent with the activity theory (Lefrancois et al., 1997).

Third, tourism satisfaction has a positive effect on psychological health by reducing levels of depression and anxiety, and fostering positive emotional states (Chen & Petrick, 2013; de Bloom et al., 2010; Iso-Ahola, 1997). The effort-recovery and the stress reliever theories and research on tourism suggest that these psychological benefits result from escaping stressful routine environments and seeking recreational opportunities. Fourth, some challenging activities during tourism may improve the self-esteem and self-concepts of participants, which is supportive by the self-congruity theory (Boksberger et al., 2011). Fifth, family and social interactions are both motivators and benefits of tourism participation. Participating in tourism with family members, friends, or getting to know new friends leads to positive feelings. Through tourism participation with family, one's bonds with loved ones can be strengthened (Durko & Petrick, 2013). Tourism may also expand one's social network and social life (Sirgy et al., 2011), which could prevent tourists, especially senior tourists, from disengagement and social isolation. In turn, the increased family and social interactions are likely to have positive effects on mental health and overall psychological wellness. The enhanced social and family supports after tourism experiences are well reflected in social inclusion theory (Morgan et al., 2015).

Finally, many tourism settings may have a particularly positive influence on spiritual well-being (e.g., Heintzman, 2002), given their role in leisure experiences. For example, wilderness and natural areas, and restorative environments, may facilitate spiritual growth to the extent that they inspire a sense of awe, provide fresh perspectives on life, and allow people to escape from routine environments, stress, and personal problems. These beneficial effects of tourism experiences are likely to improve psychological wellness and lead to better health status.

A major strength of the present study is the use of a nationwide population-based longitudinal data set with a large sample of oldest-old adults to investigate the association

between tourism participation and self-rated health, overcoming the limitations of most previous studies that have tended to merely focus on tourists and have excluded older adults, especially the oldest old. Another strength is our novel findings, showing that tourism experiences could produce independent benefits to health controlling for various other distinct leisure activities and exercise. Previous studies have not adequately addressed this relationship due to their non-population-based sample designs. We have quantified the confounding effect of other competing activities (exercise and various leisure activities) on the net health benefit of tourism. We find that although the net positive effect of tourism participation on self-rated health is reduced by half in terms of odds ratio of reporting poor health from nearly 40% to 20%, the net positive effect (20%) remains statistically significant.

To our knowledge, this is the first study to address factors associated with tourism participation and links between tourism experience and health among older adults in China. Although our findings may be generalizable only to Chinese adults, the results are consistent with a growing body of literature on the positive effects of tourism on subjective well-being, self-esteem, self-efficacy, and autonomy among adults in other nations (Chen & Petrick, 2013; Ferrer et al., 2015; Ferri et al., 2013; Marin et al., 2004; McCabe et al., 2010; Uysal et al., 2012; Wei & Milman, 2002). Overall, our study supports and extends previous research suggesting that tourism participation has net, independent, beneficial effects on health by providing empirical evidence from the older adult population in a developing country where this topic has been insufficiently studied.

Cautions are needed in interpreting our findings. First, tourism experiences within one's home county/city were not collected in the CLHLS. Therefore, the effect of tourism participation on health may be underestimated. Second, information on tourism duration, motivation, destination, mode of transportation, and other details of travel is not available in the CLHLS, which prohibits us from exploring the association between those factors and health. Future research is needed to investigate how these aspects of travel are associated with health status. Finally, we were unable to distinguish tourists for health and wellness purposes from tourists for other purposes due to the unavailability of data, which may bias the association between tourism participation and health. However, such biases should not significantly affect our results because it is estimated that only about 5% of tourism among seniors aged 65 or older is for health and wellness purposes in contemporary China (CNTA, 2014). Nevertheless, it would be preferable to collect information on purposes of tourism participation and integrate it in the analysis.

Implications

Our findings show that tourism participation is an important activity for improving the health of older adults and of even the oldest old, and thus is an effective way to promote healthy aging (WHO, 1997). The senior tourism market may become an increasingly attractive target for leisure travel services in the coming decades, as the population continues to age (Shoemaker, 2000). Older adults tend to have more time and money for tourism than younger adults (Javalgi et al., 1992). All these factors place the seniors in a key position with respect to the sustainability of the tourism industry, making them an extremely important

market segment (Zimmer et al., 1995). Therefore, findings of this study may provide useful information to travel marketers and other various organizations to formulate marketing strategies aimed at senior travelers. Our findings are especially valuable to China, where the population is aging very rapidly (United Nations Population Division, 2015).

Acknowledgments

Funding

The authors disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: The Chinese Longitudinal Healthy Longevity Survey (CLHLS) from which the data analyzed in this study were derived is jointly supported by the National Natural Sciences Foundation of China (71110107025, 71233001, 71490732 to Y.Z.), the U.S. National Institute of Aging (R01AG023627 to Y.Z.), and the United Nations Population Fund (a grant to Y.Z.)

Appendix A

Odds Ratio of Poor Self-Rated Health at a Subsequent Wave Between Having a Tourism Experience and Not Having a Tourism Experience in the Past 2 Years, Urban Residents With 1 + Year of Schooling, CLHLS 2002 to 2011.

	Model 1	Model 2	Model 3	Model 4	Model 5
Having a tourism experience in past 2 years	0.63 (0.48–0.82)**	0.69 (0.53–0.91)**	0.70 (0.53–0.91)***	0.76 (0.58–0.99)*	0.81 (0.63–1.04)
Age	1.01 (0.999–1.02)	1.01 (0.997–1.02)	1.02 (1.01–1.03)**	1.01 (1.00–1.03)*	1.01 (1.00–1.03)*
Men (women)	0.70 (0.56–0.86)**	0.73 (0.59–0.90)***	0.66 (0.56–0.82)***	0.66 (0.51–0.85)*	0.72 (0.57–0.90)**
Han ethnicity (non-Han)	0.99 (0.62–1.60)	1.01 (0.63–1.62)	1.01 (0.63–1.60)	1.00 (0.62–1.59)	0.97 (0.64–1.47)
White-collar jobs (no)		1.03 (0.81–1.31)	1.00 (0.79–1.27)	1.05 (0.82–1.33)	1.00 (0.85–1.18)
Economic independence (no)		0.79 (0.63–1.00)**	0.75 (0.60–0.95)*	0.82 (0.65–1.03)	0.83 (0.67–1.02)
Family economic condition good (poor)		0.47 (0.32–0.69)***	0.48 (0.33–0.71)***	0.51 (0.35–0.75)**	0.64 (0.45–0.91)*
Family economic condition average (poor)		0.61 (0.44–0.85)**	0.63 (0.45–0.86)**	0.64 (0.47–0.89)**	0.76 (0.57–1.03)
Getting adequate medication (no)		1.01 (0.61–0.65)	1.00 (0.61–1.65)	1.07 (0.65–1.75)	1.15 (0.73–1.81)
Currently married (no)			1.67 (1.26–2.21)***	1.68 (1.27–2.22)***	1.64 (1.28–2.11)
Living with spouse only (living alone)			0.80 (0.53–1.21)	0.79 (0.52–1.19)	0.79 (0.54–1.15)
Living with children and others (living alone)			0.87 (0.61–1.23)	0.67 (0.34–1.31)	0.89 (0.65–1.23)
Living in an older adults center (living alone)			0.72 (0.37–1.42)	0.78 (0.55–1.10)	0.70 (0.38–1.28)
No. of children paying frequent visits			0.95 (0.90–1.00)*	0.95 (0.90–1.00)	0.96 (0.91–1.01)
No. of frequent leisure activities				0.90 (0.84–0.97)**	0.92 (0.86–0.99)*
Currently smoking or ever smoked (no)				1.12 (0.89–1.40)	1.07 (0.87–1.31)
Currently alcohol consumer (no)				0.76 (0.69–0.97)*	0.81 (0.65–1.02)
Regularly doing exercise (no)				0.85 (0.69–1.05)	0.90 (0.74–1.09)

	Model 1	Model 2	Model 3	Model 4	Model 5
Poor self-rated health at last wave (no)					3.12 (2.46–3.98)***
ρ	0.241***	0.214***	0.201***	0.189***	0.000
Wald χ^2	26.2***	49.2***	65.0***	81.2***	179.7***

Note. Based on 4,322 observations from 2,966 respondents who were living in urban areas and with at least 1 year of schooling; who could self-perform all six ADL tasks without any help and were cognitive unimpaired (MMSE score ≥ 18) at each wave in 2002, 2005, and 2008; and who had at least one follow-up in the 2005, 2008, and 2011 waves, yet excluding those who died and were lost to follow-ups. The results are based on multilevel logistic regression models. CLHLS = Chinese Longitudinal Healthy Longevity Survey; ADL = activities of daily living; MMSE = Mini-Mental State Examination.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Appendix B

Odds Ratio of Poor Self-Rated Health at a Subsequent Wave Between Having a Tourism Experience and Not Having a Tourism Experience in the Past 2 Years for the Respondents Aged 80 Years or Older, CLHLS 2002 to 2011.

	Model 1	Model 2	Model 3	Model 4	Model 5
Having a tourism experience in past 2 years	0.66 (0.49–0.87) **	0.75 (0.57–1.00) *	0.76 (0.57–1.01)	0.83 (0.62–1.10)	0.83 (0.63–1.09)
Age	1.00 (0.985–1.005)	1.00 (0.996–1.005)	1.00 (0.987–1.006)	0.99 (0.98–1.00)	1.00 (0.99–1.00)
Men (women)	0.74 (0.66–0.84) ***	0.81 (0.71–0.93) **	0.78 (0.67–0.90) **	0.86 (0.73–1.01)	0.88 (0.75–1.02)
Urban (rural)	0.89 (0.79–1.01)	0.97 (0.85–1.10)	0.96 (0.84–1.09)	0.97 (0.86–1.10)	0.97 (0.86–1.10)
Han ethnicity (non-Han)	0.92 (0.75–1.14)	0.93 (0.75–1.15)	0.92 (0.74–1.14)	0.93 (0.75–1.14)	0.90 (0.74–1.10)
Years of schooling 1–6 (0)		0.97 (0.83–1.13)	0.98 (0.84–1.14)	1.02 (0.87–1.19)	1.01 (0.88–1.17)
Years of schooling 7+ (0)		0.78 (0.59–1.02)	0.79 (0.60–1.04)	0.85 (0.65–1.12)	0.86 (0.66–1.11)
White-collar jobs (no)		1.02 (0.78–1.35)	1.02 (0.77–1.34)	1.04 (0.79–1.36)	1.02 (0.79–1.32)
Economic independence (no)		0.88 (0.74–1.05)	0.86 (0.72–1.02)	0.91 (0.77–1.08)	0.92 (0.78–1.08)
Family economic condition good (poor)		0.52 (0.42–0.65) ***	0.55 (0.44–0.69) ***	0.68 (0.47–0.72) ***	0.65 (0.63–0.81)
Family economic condition average (poor)		0.70 (0.59–0.82) ***	0.72 (0.62–0.85) ***	0.74 (0.63–0.87) ***	0.81 (0.69–0.95)
Getting adequate medication (no)		0.93 (0.74–1.15)	0.97 (0.78–1.20)	0.98 (0.79–1.22)	1.03 (0.84–1.27)
Currently married (no)			1.18 (0.97–1.43)	1.10 (0.98–1.44)	1.16 (0.96–1.40)
Living with spouse only (living alone)			0.89 (0.68–1.16)	0.89 (0.68–1.16)	0.90 (0.70–1.16)
Living with children and others (living alone)			0.85 (0.72–1.00) *	0.84 (0.72–0.98) *	0.86 (0.74–1.00)
Living in an older adults center (living alone)			0.83 (0.56–1.22)	0.81 (0.55–1.19)	0.83 (0.58–1.19)
No. of children paying frequent visits			0.96 (0.93–0.99) *	0.96 (0.93–0.99) *	0.97 (0.94–1.00)
No. of frequent leisure activities				0.91 (0.87–0.95) ***	0.92 (0.88–0.96)
Currently smoking or ever smoked (no)				0.92 (0.80–1.07)	0.91 (0.79–1.05)

	Model 1	Model 2	Model 3	Model 4	Model 5
Currently alcohol consumer (no)				0.76 (0.65–0.89)**	0.87 (0.67–0.91)**
Regularly doing exercise (no)				0.90 (0.78–1.03)	0.91 (0.80–1.04)
Poor self-rated health at last wave (no)					1.85 (1.57–2.17)
ρ	0.154***	0.123**	0.116**	0.087*	0.000
Wald χ^2	35.9***	85.9***	95.5***	133.0***	200.1***

Note. Based on 8,358 observations from 6,583 respondents who were aged 80 or older at time of interview with at least 1 year of schooling; who could self-perform all six ADL tasks without any help and were cognitive unimpaired (MMSE score = 18) at each wave in 2002, 2005, and 2008; and who had at least one follow-up in the 2005, 2008, and 2011 waves, yet excluding those who died and were lost to follow-ups. The results are based on multilevel logistic regression models. CLHLS = Chinese Longitudinal Healthy Longevity Survey; ADL = activities of daily living; MMSE = Mini-Mental State Examination, ρ is the intrapersonal correlation.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

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Table 1

Descriptive Statistics for the Total Sample and for Those Who Have Had a Tourism Experience in the Past 2 Years, CLHLS 2002 to 2011.

	% sample (observations number = 25,206)	% having a tourism experience in the past 2 years
Total sample	100.0	7.91
Demographic characteristics		
Age		
65–79	43.05	11.85***
80–89	29.83	6.26***
90–99	19.84	3.38***
100–109	7.28	3.71***
Gender		
Male	49.72	8.93***
Female	50.28	6.88***
Current residence		
Urban	39.85	12.49***
Rural	60.15	4.87***
Ethnicity		
Han	92.55	8.21***
Non-Han	7.45	4.21***
Socioeconomic status		
Years of schooling		
0	54.68	4.38***
1–6	33.47	9.01***
7+	11.85	21.06***
White-collar occupation		
No	90.24	6.20***
Yes	9.76	23.72***
Economic independence		
No	67.71	5.03**
Yes	32.29	13.95***
Family economic condition		
Rich	16.26	15.38***
Average	68.10	7.28***
Poor	15.64	2.81***
Get adequate medication		
No	8.41	2.74***
Yes	91.59	8.38***

	% sample (observations number = 25,206)	% having a tourism experience in the past 2 years
Family supports		
Married		
No	52.27	5.82 ***
Yes	42.73	10.71 ***
Living arrangements		
Alone	15.89	5.38 ***
With spouse only	23.78	10.20 ***
With children and others	58.04	7.64 ***
Older adults centers	2.29	8.52 ***
No. of children paying frequent visits (average = 2.96)		
<3 children visiting	42.10	7.29 **
3+ children visiting	57.90	8.36 **
Social activities and health practice		
No. of frequent leisure activities (range 0–8, average = 2.79)		
<4 activities	67.10	4.38 ***
4+ activities	32.90	15.11 ***
Currently or ever smoking		
No	60.80	7.42 ***
Yes	39.20	8.67 ***
Alcoholic consumption at present		
No	77.01	7.63 **
Yes	22.99	8.85 **
Regularly doing exercise		
No	63.60	4.20 ***
Yes	36.40	14.39 ***
Poor self-rated health at follow-ups (observations number = 18,579)		
No	81.85	10.07 ***
Yes	18.15	6.26 ***
Poor self-rated health at baseline		
No	87.74	8.35 ***
Yes	12.26	4.72 ***

Note. The study sample is stacked from the waves in 2002, 2005, and 2008, which only includes those who are ADL not disabled and whose cognitive function is unimpaired at each wave (MMSE score = 18). The total valid observations are 25,206 from 16,239 individuals. The data for self-rated health at follow-up waves in 2005, 2008, and 2011 are 18, 579 observations from 11,717 individuals, which exclude the deceased. All data in the table are unweighted. All tests are bivariate tests across all categories of a given variable and based on Pearson chi-square test. CLHLS = Chinese Longitudinal Healthy Longevity Survey; ADL = activities of daily living; MMSE = Mini-Mental State Examination.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

Table 2

Factors Associated With Having a Tourism Experience Within the Past 2 Years, CLHLS 2002 to 2011.

	Model 1	Model 2	Model 3	Model 4
Age	0.94 (0.93–0.94) ***	0.96 (0.94–0.96) ***	0.95 (0.94–0.96) ***	0.97 (0.96–0.97) ***
Men (women)	1.31 (1.16–1.49) ***	0.74 (0.64–0.85) ***	0.74 (0.64–0.85) ***	0.76 (0.64–0.89) ***
Urban (rural)	3.23 (2.85–3.66) ***	2.08 (1.82–2.36) ***	2.08 (1.83–2.37) ***	1.73 (1.52–1.98) ***
Han ethnicity (non-Han)	1.81 (1.34–2.42) ***	1.74 (1.30–2.32) ***	1.80 (1.34–2.40) ***	1.75 (1.31–2.34) ***
1–6 years of schooling (0)		1.72 (1.47–2.01) ***	1.71 (1.47–2.00) ***	1.37 (1.17–1.60) ***
7+ years of schooling (0)		2.81 (2.28–3.47) ***	2.83 (2.29–3.49) ***	2.03 (1.64–2.49) ***
White-collar jobs (no)		2.15 (1.77–2.60) ***	2.16 (1.79–2.63) ***	1.72 (1.42–2.08) ***
Economic independence (no)		1.24 (1.08–1.44) ***	1.28 (1.11–1.47) **	1.04 (0.89–1.19)
Family economic condition good (poor)		4.43 (3.44–5.71) ***	4.31 (3.34–5.56) ***	3.58 (2.78–4.62) ***
Family economic condition average (poor)		2.04 (1.62–2.57) ***	1.99 (1.58–2.51) ***	1.83 (1.45–2.31) ***
Getting adequate medication (no)		1.53 (1.11–2.09) ***	1.47 (1.08–2.01) *	1.27 (0.93–1.74) ***
Currently married (no)			1.03 (0.87–1.23)	0.98 (0.82–1.16)
Living with spouse only (living alone)			1.02 (0.80–1.30)	1.07 (0.84–1.37)
Living with children & others (living alone)			1.24 (1.02–1.51) *	1.29 (1.06–1.57) *
Living in an older adults center (living alone)			1.50 (0.99–2.26)	1.76 (1.17–2.66) **
No. of children paying frequent visits			1.04 (1.01–1.08) *	1.03 (1.00–1.07) *
No. of frequent leisure activities				1.10 (1.08–1.11) ***
Currently smoking or ever smoked (no)				0.96 (0.83–1.11)
Currently alcohol consumer (no)				1.08 (0.94–1.24)
Doing regular exercise (no)				2.05 (1.80–2.33) ***
ρ	0.41 ***	0.36 ***	0.35 ***	0.31 ***
Wald χ^2	646.8 ***	990.1 ***	989.60 ***	1.186.2 ***

Note. Based on 25,206 observations from 16,239 respondents who could self-perform all six ADL tasks without any help; were cognitive unimpaired (MMSE score > 18) at each wave in 2002, 2005, and 2008; and had at least one follow-up in the 2005, 2008, and 2011 waves. The results are odds ratios based on multilevel logistic regression models. CLHLS = Chinese Longitudinal Healthy Longevity Survey; ADL = activities of daily living; MMSE = Mini-Mental State Examination, ρ is the intrapersonal correlation.

*
 $p < .05$.

**
 $p < .01$.

 $p < .001$.

Table 3
Odds Ratio of Poor Self-Rated Health at a Subsequent Wave Between Having a Tourism Experience and Not Having a Tourism Experience in the Past 2 Years, CLHLS 2002 to 2011.

	Model 1	Model 2	Model 3	Model 4	Model 5
Having a tourism experience in the past 2 years (no)	0.63 (0.53–0.75) ***	0.71 (0.60–0.85) ***	0.72 (0.60–0.85) ***	0.78 (0.65–0.92) **	0.80 (0.68–0.94) **
Age	1.00 (0.997–1.007) ***	1.00 (0.99–1.00)	1.00 (0.996–1.006)	1.00 (0.992–1.003)	1.00 (0.994–1.004)
Men (women)	0.73 (0.66–0.80) ***	0.81 (0.73–0.90) ***	0.79 (0.71–0.88) ***	0.86 (0.76–0.97) *	0.90 (0.81–1.00) *
Urban (rural)	0.86 (0.78–0.94) **	0.94 (0.86–1.03)	0.94 (0.86–1.03)	0.97 (0.87–1.06)	0.96 (0.89–1.05)
Han ethnicity (non-Han)	1.05 (0.88–1.25)	1.07 (0.89–1.26)	1.03 (0.86–1.22)	1.04 (0.88–1.23)	0.99 (0.85–1.15)
1–6 years of schooling (0)		0.92 (0.82–1.02)	0.92 (0.82–1.03)	0.97 (0.87–1.09)	0.98 (0.89–1.07)
7+ years of schooling (0)		0.77 (0.64–0.93) **	0.77 (0.64–0.92) **	0.83 (0.69–0.99) *	0.84 (0.72–0.99) *
White-collar jobs (no)		1.02 (0.85–1.23)	1.01 (0.84–1.21)	1.04 (0.86–1.25)	1.00 (0.85–1.18)
Economic independence (no)		0.87 (0.78–0.96) **	0.84 (0.75–0.94) **	0.88 (0.79–0.98) *	0.90 (0.82–0.99) *
Family economic condition good (poor)		0.55 (0.46–0.64) ***	0.57 (0.48–0.67) ***	0.59 (0.51–0.70) ***	0.69 (0.60–0.81) ***
Family economic condition average (poor)		0.64 (0.57–0.73) **	0.67 (0.59–0.75) ***	0.68 (0.60–0.77) ***	0.77 (0.69–0.86) ***
Getting adequate medication (no)		0.66 (0.89–0.76)	0.92 (0.78–1.07)	0.93 (0.80–1.09)	1.00 (0.87–1.16)
Currently married (no)			1.10 (0.97–1.26)	MI (0.97–1.25)	1.09 (0.97–1.23)
Living with spouse only (living alone)			0.95 (0.80–1.14)	0.95 (0.80–1.13)	0.95 (0.82–1.11)
Living with children and others (living alone)			0.80 (0.71–0.91) **	0.79 (0.70–0.90) **	0.83 (0.74–0.93) *
Living in an older adults center (living alone)			0.80 (0.56–1.12)	0.78 (0.55–1.10)	0.82 (0.61–1.12)
No. of children paying frequent visits			0.96 (0.94–0.98) **	0.96 (0.94–0.99) **	0.97 (0.95–0.99) **
No. of frequent leisure activities				0.92 (0.89–0.95) ***	0.94 (0.91–0.97) ***
Currently smoking or ever smoked (no)				0.97 (0.87–1.08)	0.95 (0.86–1.04)
Currently alcohol consumer (no)				0.72 (0.64–0.81) ***	0.76 (0.69–0.85) ***
Regularly doing exercise (no)				0.84 (0.77–0.93) **	0.87 (0.80–0.95) **
Poor self-rated health at last wave (no)					2.21 (1.99–2.46) ***
p	0.231 ***	0.198 ***	0.196 ***	0.182 ***	0.000
Wald χ^2	94.6 ***	207.8 ***	233.9 ***	309.1 ***	581.4 ***

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Note: Based on 18,579 observations from 11,717 respondents who could self-perform all six ADL tasks without any help; were cognitive unimpaired (MMSE score > 18) at each wave in 2002, 2005, and 2008; and had at least one follow-up in the 2005, 2008, and 2011 waves, yet excluding those who died and were lost to follow-ups. The results are based on multilevel logistic regression models. CLHLS = Chinese Longitudinal Healthy Longevity Survey; ADL = activities of daily living; MMSE = Mini-Mental State Examination. ρ is the intrapersonal correlation.

* $p < .05$.

** $p < .01$.

*** $p < .001$.