



Social identity, perceived urban neighborhood quality, and physical inactivity: A comparison study of China, Taiwan, and South Korea



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ABSTRACT

Asian countries are currently witnessing unprecedented increase in physical inactivity and subsequent negative health outcomes; however, few cross-country studies documenting this trend exist. This paper presents the findings of a nationally representative sample, based on the East Asian Social Survey in 2011. The study sought to examine the association of social identity factors, such as objective socio-economic position, perceived social status and neighborhood quality with physical inactivity, while controlling for psychosocial and physical health. A sample of 5222 adults living in urban areas across China, Taiwan, and South Korea were surveyed. *Methods:* Multivariate nested logistic regressions were constructed. *Results:* Perceived social status was positively associated with physical activity. Gender difference in physical activity was significant, and this difference widened as educational levels increased. Class division in physical activity was also found. Perceived physical and social features of neighborhood such as suitability for walking and jogging, air quality, and help from neighbors were to different degrees associated with physical inactivity. *Conclusion:* Gender, marital status, education and perceived social status were common factors associated with physical inactivity in East Asian countries. Perceived urban neighborhood quality is particularly important for Chinese people to stay physically active. Cultural-behavioral norms for physical activity associated with gender and social status call for more studies on cultural perspective for health behaviors in cross-cultural contexts.

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1. Introduction

In Asia, urbanization generally carries with it a higher income, shift in work style, and change of residential location. People are exchanging more labor-intensive occupations in rural industries for sedentary jobs in urban areas. Consequently, such a transition has led to increasing physical inactivity. By definition, physical inactivity refers to not having 3 or more days of vigorous activity lasting at least 20 min that makes people sweat or breathe heavier than usual, on a weekly basis (IPAQ Research Committee, 2005). The term is in contrast to sedentary behaviors that involve consistently sitting and low levels of energy expenditure (IPAQ Research Committee, 2005; Guthold et al., 2008). Studies revealed 17–31% prevalence of physical inactivity globally from 2008 to 2012 (WHO, 2009; Hallal et al., 2012). Currently, one-third of adult populations are physically inactive (Pratt et al., 2015).

There is considerable concern about physical inactivity and its association with chronic diseases (WHO, 2009) and adverse health

outcomes, including worldwide mortality (WHO, 2009; Bauman et al., 2012; Pratt et al., 2015). Factors associated with physical inactivity have been examined extensively in developed countries (Kahlmeier et al., 2015; Lee et al., 2012). However, very little information is known in developing countries (Guthold et al., 2008). Therefore, in order to prevent chronic diseases resulting from physical inactivity, particularly in East Asian countries, there is need to fill this knowledge gap.

The literature has shown that people at the top of the socio-economic strata report higher levels of leisure time or moderate to vigorous intense physical activity than those at the bottom (Gidlow et al., 2006; McNeill et al., 2006). Yet, research on the social patterning of physical inactivity in Asian contexts is relatively scarce (Jurj et al., 2007).

The association between socioeconomic position (SEP) and physical activity is related to the developmental level of a country. In developing countries, a labor-active lifestyle that requires physical activities at work and commute to work is considered a necessity. For these nations, adopting what is characterized as a healthier Western lifestyle is thought to be a privilege that only the affluent can afford (Gidlow et al., 2006).

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In China, the wealthy and those with socioeconomic privilege were twice as likely to be physically active in terms of leisure time activity (OR=2.1 and 2.7 for men and women, respectively), but less likely to be physically active in work (OR=0.1 and 0.1 for men and women, respectively) and commuting-related activities (OR=0.4 and 0.5 for men and women, respectively) compared with the less affluent (Bauman et al., 2011). In South Korea, the rate of physical activity is significantly associated with income levels (Kim et al., 2014).

While several psychosocial, cognitive, and emotional factors on the individual level have been used to explain why some people are active and others are inactive (Sherwood and Jeffery, 2000), physical activity has been defined as a behavior that is shaped by one's social environment (Li et al., 2005). It is difficult to assess or change the low prevalence of physical activity in Asian countries without consideration of social and cultural norms, neighborhood resources for engaging in physical activity, and environmental constraints such as unsafe neighborhoods.

1.1. Social identity

Social identity, including SEP and subjective social status (SSS), is defined as the mechanism of classifying oneself or others into various social categories (Ashforth and Mael, 1989). Research has shown that SSS is consistently and often strongly related to cholesterol levels, obesity, waist circumference, waist-to-hip ratio, overweight status, hypertension, diabetes, and depression (Demakakos et al., 2008; Operario et al., 2004). Perceptions of one's standing within a social hierarchy reflects how one evaluates oneself in terms of group-defining attributes; and, this identity can produce motivation, sense of status and control, preferences, and opportunities that influence health and health behaviors (Shilling, 1991). Perception of one's own low social status may generate status anxiety and consequent psychological distress, which may help explain the relationship between socioeconomic status (SES) and health (Adler et al., 2000; Demakakos et al., 2008).

1.2. Perceived neighborhood quality

Several studies have indicated that perceived (subjective) neighborhood characteristics have a higher impact than actual (objective) ones on health outcomes and health behavior (Ross and Mirowsky, 2001). Subjective assessments of neighborhood characteristics substantially reflect an individual's perspectives and appraisal of the quality of his/her neighborhood (Cho et al., 2005). Therefore, subjective assessments of neighborhood quality are used as measures in this study. Adopted from Macintyre et al. (2002) and McNeill et al. (2006), this study identifies four aspects of physical and social environments. First, features of the physical environment of the neighborhood, such as poor air quality, may inhibit physical activity (An and Xiang, 2015; Li et al., 2015; Humphreys et al., 2014). Second, the perceived lack of available and accessible health and municipal services such as recreational facilities can limit opportunities for physical activity (Heath et al., 2012; Sallis et al., 2012). Third, the social environment of the neighborhood such as social support and cultural norms for encouraging or enforcing patterns of social control may place constraints on individual choice (Bauman et al., 2012; Beets et al., 2010). Fourth, the living conditions of neighborhoods can shape where people spend their leisure time and where they exercise (Casper and Harrolle, 2013; Santos et al., 2016). For instance, daily exposure to an unsafe environment can discourage physical activity (Timperio et al., 2015).

1.3. Cross-cultural comparison

In comparing Taiwan with China and South Korea, key cultural and societal assumptions must be addressed. First, the social and economic aspects of Taiwan and China are clearly different due in part to divergences in political ideology, which have led to communist practice in Mainland China and democratic policies in Taiwan. Both, however, are still considered Chinese societies that share long-standing, traditional Confucian philosophies and social norms that affect all aspects of life. The factors affecting health behaviors may be similar between Taiwan and China, and detailed comparisons between the two nations will further deepen understanding of how cultural values serve as an infrastructure allowing for similarities and differences.

On the contrary, the process of social and economic development in South Korea in recent years is also similar to that of Taiwan. For example, South Korea and Taiwan are both leading nations in the information technology industry and both have similar levels of gross domestic product (GDP). The South Korean GDP in 2014 was estimated at US \$26,991 while in Taiwan the GDP in 2014 was estimated at US \$23,582 (IMF, 2015). Both countries have high life expectancy, low infant mortality rate, an average of 12 years of education, and > 98% literacy rate among citizens above age 15. Similar social development brought similar trends of urbanization and globalization. If such social development serves as crucial infrastructure in these two societies, similar socio-environmental factors affecting health behaviors can be identified.

In light of the above discussion, this study aims to address the extent to which objective SEPs (such as education level and occupation-based social class), SSS, and perceived neighborhood quality are associated with physical inactivity across Taiwan, China, and South Korea, while controlling for overweight status, chronic disease, and psychological distress.

2. Methods

2.1. Survey and sample

This study uses data from the East Asian Social Survey (EASS) (Health Module) collected from China and South Korea in 2010 and from Taiwan in 2011 (Noriko et al., 2010). These data consist of a common module, set into a general social survey (GSS)-type questionnaire, which is a nationally representative sample survey from each of the three countries. Samples were selected by multistage stratified probability sampling. Valid response rates were 71.99%, 63%, and 49.7% in China, South Korea, and Taiwan, respectively. Details of EASS data are described at the EASS website (<http://eass.info>). In-person interviews were conducted to collect the data in each of the study countries. Because there is no weighting conducted in South Korea, and only urban residents were selected for the analysis, no weighting scheme was employed in this study.

2.2. Eligibility

The data were derived from individuals aged ≥ 18 years, with 2199, 3866, and 1576 valid samples from Taiwan, China, and South Korea, respectively (Chang et al., 2012). Because of the distinct urban–rural differences in China, samples from rural areas in these three countries were excluded to avoid possible bias (Treiman, 2012). Hence, 5222 adult urban residents aged ≥ 18 years were included in the analysis, with the largest group being from China ($n=2268$), followed by Taiwan ($n=1659$) and South Korea ($n=1295$). However, the study sample had missing responses for some of the variables studied. Education level had the largest

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