



Associations of public bicycle use with transport-related and leisure-time physical activity in Taiwanese adults



Yung Liao^a, Shao-Hsi Chang^b, Po-Wen Ku^c, Jong-Hwan Park^{d,*}

^a Department of Health Promotion and Health Education, National Taiwan Normal University, 162, Heping East Road Section 1, Taipei, Taiwan

^b Department of Physical Education, National Taiwan Normal University, 162, Heping East Road Section 1, Taipei, Taiwan

^c Graduate Institute of Sports and Health, National Changhua University of Education, No. 1, Jinde Rd., Changhua City 500, Taiwan

^d Institute of Convergence Bio-Health, Dong-A University, 32, Daeshingongwon-Ro, Seo-Gu, Busan, Republic of Korea

ARTICLE INFO

Article history:

Received 19 July 2016

Received in revised form

12 February 2017

Accepted 13 February 2017

Available online 6 March 2017

Keywords:

Active transport

Bicycle

Health

Physical activity guidelines

Taiwanese adults

ABSTRACT

Background: This study aimed to identify the cross-sectional associations of public bicycle use with physical activity during transport and leisure-time among Taiwanese adults.

Methods: A telephone interviewing and CATI survey was conducted to Taiwanese adults aged 20–64 years. Data on public bicycle use (nonpublic, nonregular public, and public bicycle users) and time spent engaging in transport-related and leisure-time physical activity (International Physical Activity Questionnaire-long version) were obtained from 1068 adults in three urban cities.

Results: After adjustment for potential confounders, public bicycle users were found to be more likely to achieve 150 minutes of transport-related physical activity (OR = 1.97; 95% confidence interval [CI]: 1.25–3.10) and leisure-time physical activity (OR = 1.79; 95% CI: 1.14–2.81) than nonpublic bicycle users were.

Discussion: Public bicycle use is associated with achieving the recommended domain-specific physical activity levels. Encouraging public bicycle use is promising for encouraging adults to achieve health-enhancing levels of transport-related and leisure-time physical activity.

© 2017 Elsevier Ltd All rights reserved.

1. Introduction

Physical inactivity is the fourth leading risk factor for global mortality and a major risk factor for noncommunicable diseases such as cardiovascular disease, type 2 diabetes, and certain types of cancer (World Health Organization, 2010). Engaging in sufficient physical activity (moderate-to-vigorous activity for at least 150 minutes per week) is not only associated with a reduced rate of chronic diseases but also increased cardiorespiratory and muscular fitness, healthier body mass, and improved bone health and cognitive function in adults (Lee et al., 2012). However, as in most countries worldwide (Hallal et al., 2012), nearly 50% of adults in Taiwan fail to meet the minimum physical activity recommendation (Bauman et al., 2009). Therefore, it is crucial to develop effective strategies for promoting Taiwanese adults to achieve health-enhancing levels of physical activity.

Cycling is a specific form of physical activity that effectively taxes the cardiorespiratory and metabolic functions of the

* Corresponding author.

E-mail addresses: liaojung@ntnu.edu.tw (Y. Liao), t08016@ntnu.edu.tw (S.-H. Chang), powen@cc.ncue.edu.tw (P.-W. Ku), jpark@dau.ac.kr (J.-H. Park).

whole body in a wide range of intensities, and it is an excellent potential means of promoting physical activity and public health (Oja et al., 2011). Moreover, cycling has the additional environmental benefits of reducing air pollution and traffic jams, and reducing carbon emissions (Woodcock et al., 2009). Consequently, in more than 600 cities in the United States, Europe, Australia, and Asia, public bicycle-sharing systems have been implemented to promote cycling behavior (Rojas-Rueda et al., 2011; Shaheen, Guzman and Zhang, 2010). Numerous studies have indicated that public bicycle use is associated with high levels of physical activity in adults (Rojas-Rueda et al., 2011; Woodcock et al., 2014; Molina-Garcia et al., 2013). Similar to other forms of physical activity, public bicycle use may be undertaken in different contexts or domains, which are mostly related to daily routines (e.g., active commuting and moving from place to place) and leisure activities (Howley, 2001; Samitz, Egger and Zwahlen, 2011). However, to our knowledge, no studies have examined the association of public bicycle use with the recommended levels of domain-specific physical activity, particularly transport-related and leisure-time physical activity in adults. This information can guide policy makers and intervention designers in not only gaining a more comprehensive understanding of public bicycle use but also in developing effective physical activity interventions. Therefore, in this study, we examined the associations of public bicycle use with transport-related and leisure-time physical activity in Taiwanese adults.

2. Materials and methods

2.1. Participants

In this study, data were collected by administering a random digit-dialing telephone-based cross-sectional survey in 2015 through a telephone research service company. The survey was conducted in three cities in Taiwan (Taipei, New Taipei, and Kaohsiung) in which public bicycle-sharing systems had been implemented for more than 3 years (YouBike Taipei's public bicycle Web site, 2015; Kaohsiung Public Bike Web site site 2015; New Taipei City's public bicycle Web site, 2015). Detailed study methods and attributes of participants and have been previously reported (Liao, 2016). As described in a previous study (Liao, 2016), a total of 5333 adults were surveyed, of whom 1069 completed the survey (response rate: 20.04%). However, after data cleaning, 1068 participants submitted valid data for analysis. Oral informed consent was obtained before the start of the telephone interviews, and the study protocols were approved by the Ethics Committee of National Taiwan University (201504HM005).

2.2. Outcome variables

Information on outcome variables including transport-related and leisure-time physical activity was obtained using the Taiwanese version of the International Physical Activity Questionnaire-long version (IPAQ-LV) (Liou et al., 2008), which is widely used in telephone-based surveys (Parra et al., 2011; Reis et al., 2013; Liao et al., 2015). This questionnaire exhibits high test-retest reliability ($r = 0.78$) and acceptable criterion validity ($r = 0.31$ – 0.41) compared with accelerometers (Liou et al., 2008). For transport-related physical activity, the second part of the IPAQ-LV was used to measure the frequency (number of days in the previous 7 days) and duration (minutes per day) of engaging in “walking for transportation” and “cycling for transportation.” The total time spent engaging in transport-related walking and cycling was sum up by multiplying the frequency (per week) by the duration of transportation (per day). Time spent in leisure-time physical activity was measured by the fourth part of the IPAQ-LV, including time spent in the three domains of vigorous-intensity and moderate-intensity physical activity, as well as walking during leisure-time. Same method for calculation was utilized. According to the recommendation of the IPAQ Scoring Protocol (IPAQ, 2015), the two outcome variables were dichotomized since the distributions were skewed. Furthermore, according to the global physical activity recommendation for adults (World Health Organization, 2010; Haskell et al., 2007), outcome variables were categorized into “satisfying 150 min per week” and “not satisfying 150 min per week”.

2.3. Independent variables

The independent variable was the self-reported frequency of public bicycle use in the previous 7 days, which was reported as a valid item in a previous study (Fuller et al., 2011). Respondents indicated whether they had ever used public bicycles. If they had used public cycles, the follow-up question “During the past 7 days, on how many days did you use a public bicycle for at least 10 min?” was asked. Respondents were divided into three categories according to their public bicycle use: nonpublic bicycle users (never used), nonregular public bicycle users (had not used one in the previous 7 days), and public bicycle users (used ≥ 1 time in the previous 7 days).

2.4. Covariates

The covariates included gender, age (20–29, 30–39, 40–49, 50–59, and 60–64 years), city of residence, education level (high school degree or lower and university degree or higher), occupation type (non-full-time job and full-time job), marital status (married or unmarried), living status (living with others and living alone), body mass index (BMI: not overweight

Download English Version:

<https://daneshyari.com/en/article/5117679>

Download Persian Version:

<https://daneshyari.com/article/5117679>

[Daneshyari.com](https://daneshyari.com)