



Association of Asian/Asian-American immigrants' physical activity behavior and length of residence in the U.S.

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ABSTRACT

Background: The aim of this study was to examine the potential relationship between Asian/Asian-American immigrants' length of residence in the U.S. and their leisure-time physical activity behavior.

Methods: Data were obtained from the National Health and Nutrition Examination Survey (NHANES, 2013–2014). Among 1,074 non-Hispanic Asian/Asian-American participants, 541 (female = 287, male = 254) were >20 years of age ($M = 48.51$, $SD = 15.22$), not born in the U.S., and they reported their physical activity data. Results: Binary logistic regression was used to estimate the odds ratios and 95% confidence intervals of reporting participation in leisure-time, moderate-to-vigorous physical activity (MVPA). After adjusting for age, gender, income, and education level, those living in the U.S. increased their odds of participating in MVPA. Specifically, compared to those who had been in the U.S. for <1 year, those who had been in the U.S. for 1–4 years, 5–9 years, 10–20 years, and >20 increased their odds of MVPA participation by 145%, 139%, 189%, and 293%, respectively, with p values being marginally significant for 10–20 years $p = 0.06$, and significant for more than 20 years, $p = 0.02$.

Conclusions: This set of observations implies that there may be positive features in American culture in terms of facilitating Asian/Asian-American adults' MVPA as their length of residence in America increased. Gaining deeper insights into precisely what those features are and design targeted physical activity promotion program should be the focus of the future research.

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Introduction

Beginning in 2011, minority births surpassed white births for the first time in the U.S. [1]. This marks an important demographic shift: what Gladwell [2] referred to as a “tipping point”—the moment in time when things change in a profound manner. One contributor to this shift was foreign-born citizens or legal residence, who constituted 43.7 million or about 11% of the total U.S. population in 2017 [3]. By 2050, this figure is expected to increase to 18% of the U.S. population. Given that, the health behaviors and health status of immigrants and their generational descendants have the potential to become increasingly larger consumers of health-related

programs, products, and services, as well as users of the healthcare system [4].

The Asian/Asian-American population—at least a sub-population of this inclusive ethnic/racial categorization have been found to among the most inactive [5,6]. Previous studies on international students' physical activity experiences in the U.S. help us understand how ethnicity/race and culture may interact with each of us and re-shape individuals' physical activity behavior upon arriving to a different country [7,8,9]. Exploring developmental behavioral patterns of Asian/Asian-American immigrants' physical activity behavior can inform life-course understanding of physical activity

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behavior [10] and help to develop comparative and international aspects of the discipline [11,12,13].

When individuals immigrate or otherwise move from one country to another, the journey of acculturation begins [14]. As the length of residence increases, immigrants are more likely to acculturate to their new environment, as well as the social norms in the hosting culture, in return. In terms of the physical activity participation, most previous studies have focused on Hispanic immigrants, with the mixed findings on its relationship with acculturation. For example, two studies showed the length of residence was associated with decreased odds of Hispanic/Mexican-American immigrants living a sedentary lifestyle [15,16], while a recent study showed the opposite relationship among Hispanic adolescents living in the U.S. [17].

Asian immigrants' acculturative experience may be different from other immigrant groups because eastern and western countries are disparate economically, politically, and socially [5,8,18,19]. For example, people born and raised in an Asian society may have different cultural orientations and values in comparison to people born and raised in a western society [20]. A classic example of this is the "collectivist" versus "individualist" worldview. This may manifest itself in different ways, including different perspectives regarding a variety of health behaviors. For example, even though there is wide recognition that physical activity is good for people's health and wellbeing [21], different perspectives about the importance and role of physical activity in one's life do exist and this may result in different participation patterns [6,19].

The present study seeks to contribute to this body of work by examining the relationship between Asian/Asian-American immigrants' length of residence in the U.S. (i.e., temporality) and their engagement in moderate-to-vigorous physical activity (MVPA). This study seeks to advance understanding by considering a racial/ethnic group other than Hispanic/Mexican-American, as well as the physical activity behavior of a wide-range of adults.

Method

Participants and study design

This is a secondary data analysis project. The data were originally collected as part of the 2013–2014 National Health and Nutrition Examination Survey (NHANES). NHANES is an ongoing survey conducted

by the Centers for Disease Control and Prevention using a representative sample of non-institutionalized U.S. civilians, who are selected using a complex, multistage probability design. The NHANES survey protocol was approved by the Centers for Disease Control and Prevention's Institutional Review Board, with all study participants providing their written informed consent.

Among a total of 1,074 non-Hispanic Asians who completed the survey, 541 were eligible for the analysis (i.e., ≥ 20 -year old, not born in the U.S., and they had to have reported their income, education, and physical activity participation level). The mean age of the participants was 48.51 years (SD = 15.22) and the final sample included both men ($n = 254$) and women ($n = 287$) (see Table 1).

Table 1. Demographic variables and MVPA measures among Asian immigrants who were 20 years or older.

	<i>n</i> (%)
Gender	
Female	287 (53.04)
Male	254 (46.95)
Age	
20–35	130 (24.03)
36–50	185 (34.20)
51–65	150 (27.72)
66–80	76 (14.05)
Length of residency	
<1	16 (2.96)
1–4	53 (9.80)
5–9	65 (12.01)
10–20	154 (28.47)
>20	253 (46.77)
Education	
Less than 9th grade	46 (8.50)
9–11th grade	26 (4.81)
High school grade	87 (16.08)
Some college degree	97 (17.93)
College graduate or above	285 (52.68)
Annual household income	
<24,999	95 (17.56)
<54,999	123 (22.74)
<74,999	67 (12.39)
<99,999	47 (11.93)
>99,999	209 (38.63)
Recreational MVPA	
Yes	306 (56.56)
No	235 (43.44)

Measures

Demographic variables

Demographic variables included residency in the U.S., gender, age, education level, and annual household income. U.S. residency was categorized by temporality as follows: <1 year, 1–4 years, 5–9 years, 10–20 years, and >20 years. While acknowledging a breadth of potentially contributory factors such as cultural, psychological, and sociological factors [5,22,23], the temporal dimension (i.e., time) can serve as reasonable proxy of acculturation [16].

Physical activity

Participants were asked whether they participated in Moderate-to-vigorous physical activity in a typical week. Specifically: (a) *In a typical week, do you do any vigorous-intensity sports, fitness, or recreational activities that cause large increases in breathing or heart rate like running or basketball for at least 10 minutes continuously?* and (b) *In a typical week do you do any moderate-intensity sports, fitness, or recreational activities that cause a small increase in breathing or heart rate such as brisk walking, bicycling, swimming, or golf for at least 10 minutes continuously?* Participants who answered “Yes” to either of the two questions were classified into the MVPA group.

Analysis

All statistical analyses were conducted using Stata statistical software in 2017. The sample weights from NHANES allow valid population estimates for the defined demographic group. Binary logistic regression was used to estimate the odds ratios and 95% confidence intervals of reporting participation in recreational forms of either moderate or vigorous physical activity. Gender, annual household income, and education level were analyzed as controlled variables.

Results

All total, 306 people (56.56%) participated in MVPA. After adjusting for age, gender, income, and education level, study participants increased their odds of achieving MVPA on the basis of temporal grouping, with the key time periods being equal to or greater than one or two decades. As summarized in Table 2, compared to those who had been in the U.S. for <1 year, those who had been in the U.S. between 1–4 years, 5–9 years, 10–20 years, and >20 increased their odds of MVPA participation by 145%, 139%, 189%, and 293%, respectively, with p values being

Table 2. Odds ratio and confidence intervals of participating moderate-to-vigorous physical activity.

Years in the U.S.	OR	CI
<1	1.0	(Reference)
1–4	2.45	0.70–8.61
5–9	2.39	0.70–8.10
10–20	2.89 [∇]	0.91–9.20
>20	3.93*	1.24–12.46

[∇] $p = .06$; * $p < .05$.

marginally significant for 10–20 years $p = 0.06$, and significant for >20 years, $p = 0.02$.

Discussion

Asian/Asian-American immigrants who lived in the U.S. for >10 years and especially >20 years were more likely to have been engaging in MVPA in comparison to those who had been living in the U.S. <1 year. The association between engaging in MVPA and temporality increased as the length of residency in the U.S. increased.

Although acculturation was not directly measured in this study, temporality can serve as a proxy measure of acculturation [5,16]. Essentially, temporality reflects the gestalt of accumulative influences of the host country on those who have immigrated. The accumulative influences are imbedded across multiple levels of influence and include, among other things, the physical and socio-cultural environment, community and institutional factors, and social networks and interpersonal relationships [24,25]. Although each immigrants' acculturative experiences are unique and their experiences with and opportunities to engage in physical activity also differ, this study demonstrated that, collectively, the social norms and physical activity environment in American society seem to have positively influenced the Asian/Asian-American-immigrants' physical activity behavior.

There are several limitations to the current study. First, physical activity was assessed using self-report data. Such data are susceptible to item interpretation, recall, and social desirability forms of bias. Second, from the physical activity measure employed, the frequency, intensity and duration of the physical activity of the participants cannot be determined; thus, we cannot state with certainty that the study participants were achieving an active lifestyle in accordance with the recommendations of the American College of Sports Medicine

[26]. Third, temporality served as a proxy measure of acculturation. As such, we cannot precisely state what acculturation factors were more or less important. Last, as a cross-sectional study, we cannot assume causation.

Conclusion

Notwithstanding the evidence of a generally inactive nation [27], the findings of the present study suggest that there are some positive features in American culture that facilitate and support MVPA among Asian/Asian-American adults who have immigrated to and resided in the U.S. for one or especially two or more decades. Gaining deeper insight into precisely what those features are should be the focus of the future research.

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