Acculturation and Physical Activity Among Chinese Immigrants

Joyee Tseng[1], Juliet Chang[2], Marilyn Tseng[3]
1. School of Medicine, University of California - Davis, Sacramento, CA, USA
2. School of Pharmaceutical Sciences, University of California - Irvine, Irvine, CA, USA
3. Kinesiology and Public Health Department, California Polytechnic State University, San Luis Obispo, CA, USA

Introduction

- There is increasing evidence of how physical activity (PA) can potentially play a role in healthy aging, decreased mortality, and lower lifestyle disease such as Type 2 Diabetes (T2D)[1]
- Asian Americans have continued to be the fastest growing ethnic group in the United States[2] and there are significant lower rates of PA in the Asian American population than in other ethnic groups[3]
- This can possibly be attributed to the different levels of acculturation to Western cultures as it has been seen that a higher identification with American Society can be associated with more recreation-related PA[4]
- Most studies on acculturation and physical activity has focused on the Asian American population without subgroups even though it has been shown that there is heterogeneity among the subgroups[5]

Objective

- The purpose of this project is to identify the association between cultural adaptation and the prevalence of physical activity in Chinese immigrants because they represent the largest subgroup of Asian immigrants.

Methods

- Baseline data was collected from a longitudinal study of diabetes risk in a cohort of >600 Chinese immigrants recruited Jan 2016 - May 2019 throughout the Philadelphia region.
- Acculturation was measured using the General Ethnicity Questionnaire - American version (GEQAr) and a acculturation score computed with 1.0 (least acculturated) to 5.0 (most acculturated). Categorical variables were created from GEQAr distribution as low, medium, and high categories.
- All participant's PA responses were calculated into three categories (vigorous, moderate, and walking) of average min/week then converted to METS (multiples of the resting metabolic rate)- minutes/week using updated guidelines from International Physical Activity Questionnaire (IPAQ).
- Univariate analysis and Bivariate association between GEQAr and MET-min/week was calculated using SAS Studio.

Results

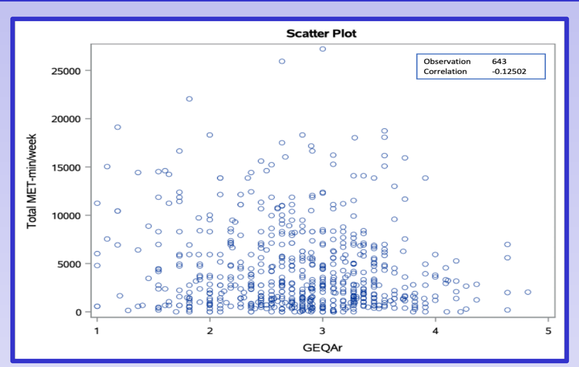

Figure 1: Correlation between acculturation scores (GEQAr) and Total MET-min/week

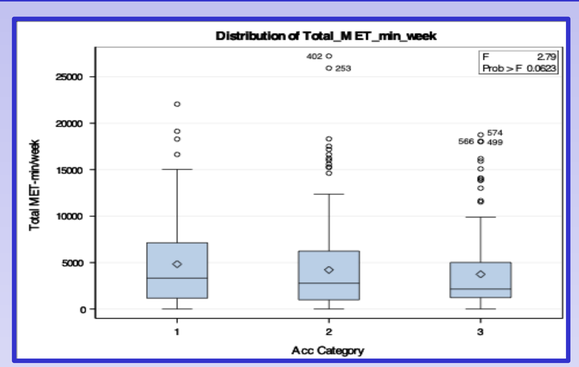

Figure 2. ANOVA results for Total MET - min/week across acculturation categories (1-low, 2-medium, 3-high)

Least Squares Means for Effect Acculturation Category
Pr > |t| for H0: LSMean(i)=LSMean(j)
Dependent Variable: Total_MET-min/week

i/j	1	2	3
1		0.2956	0.0494
2	0.2956		0.4820
3	0.0494	0.4820	

Table 1. Pairwise comparison using Least Squares Mean for Total MET-min/week across Acculturation Categories.

Least Squares Means for Effect Acculturation Category
Pr > |t| for H0: LSMean(i)=LSMean(j)
Dependent Variable: Walk MET-min/week

i/j	1	2	3
1		0.2862	0.0009
2	0.2862		0.0286
3	0.0009	0.0286	

Table 2. Pairwise comparison using Least Squares Mean for Walking MET-min/week across Acculturation Categories.

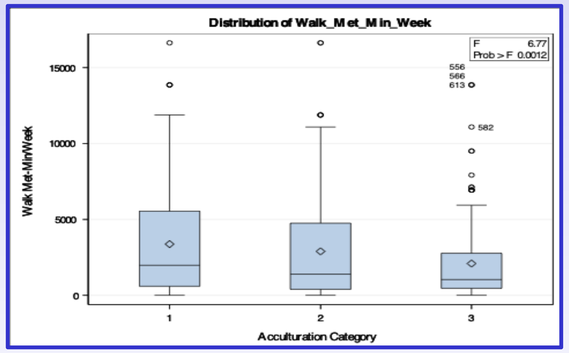

Figure 3. ANOVA results for Walking MET - min/week across acculturation categories (1-low, 2-medium, 3-high)

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Discussions

- The correlation coefficient between GEQAr and Total MET-min/week is -0.12502 suggesting a weak correlation between the two which can be due to the different types of activity that is calculated within the Total MET-min/week. (Figure 1)
- There is no statistically significant difference between Total Met-min/week across categories (p=0.0623) but there seems to be a trend towards decreased activity with a higher acculturation score. (Figure 2)
- The least squares means for each category showed that 1(low) and 3(high) categories are significantly different in pairwise comparison with a p-value of 0.0494 indicating stronger evidence towards the negative behavior of a lower total MET-min/week as acculturation scores increase. (Table 1)
- The overall p-value (p=0.0012) shows that there is a statistically significant difference between the mean Walking MET-min/week among the three acculturation variables. (Figure 3)
- Category 3 walks significantly less than both the Category 1 (p=0.0009) and Category 2 (p=0.0286) which suggests that the higher the acculturation score the less time put into walking. (Table 2)

Conclusions

- The preliminary univariate and bivariate analysis of the Chinese immigrants show that there may be some association between physical activity and acculturation, but acculturation doesn't necessarily lead to increased PA. The data suggests a negative trend where the higher the acculturation the less physical activity, especially less walking which needs more investigation because this is a novel finding.

Future Implications

- Further statistical analysis needs to be made to understand the influence of MET-min/week walking on the Total MET-min/week and to see if there is a difference among the male and female participants.
- Eventually multivariate linear regression analyses may also be conducted to adjust for potential cofounders, and logistic regression analyses will estimate odds ratios as a measure of association between acculturation level of likelihood of achieving recommended levels of activity.

References

1.Bauman A, Merom D, Bull FC, Buchner DM, Fiatarone Singh MA. Updating the Evidence for Physical Activity: Summative Reviews of the Epidemiological Evidence, Prevalence, and Interventions to Promote "Active Aging". *Gerontologist*. 2016;56 Suppl 2:S268-S280. doi:10.1093/geront/gnw031
2.Hoeffel EM, Rastogi S, Kim MO et al. The Asian Population: 2010. U.S. Census Bureau, 2012.
3.Yi, Stella S et al. "Disparities in meeting physical activity guidelines for Asian-Americans in two metropolitan areas in the United States." *Annals of epidemiology* vol. 25,9 (2015): 656-660.e2. doi:10.1016/j.annepidem.2015.05.002
4.Lee, J. W. R., et al. "Trends in the Prevalence of Type 2 Diabetes in Asians Versus Whites: Results from the United States National Health Interview Survey, 1997-2008." *Diabetes Care*, vol. 34, no. 2, 2011, pp. 353–357., doi:10.2337/dc10-0746.
Gomez, Scarlett L et al. "Immigration and acculturation in relation to health and health-related risk factors among specific Asian subgroups in a health maintenance organization." *American journal of public health* vol. 94,11 (2004): 1977-84. doi:10.2105/ajph.94.11.1977