

Weight stigma in relation to hair cortisol and binge eating in obese Asian-Americans

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Introduction

Obesity is an important public health concern for Asian-Americans in the United States (Jih et al., 2014). Many children and adults face weight stigmatization as a result of being overweight or obese (Levy & Pilver, 2012). Weight stigma can be defined as individuals experiencing verbal or physical abuse secondary to being overweight or obese (Puhl & Heuer, 2011).

Weight stigma may be considered a stressor and cause cortisol levels to increase by triggering hypothalamic-pituitary-adrenocortical (HPA) axis activation, which can lead to adverse health outcomes such as a high-risk for developing type 2 diabetes and poor glycemic control (Tsenkova et al., 2011). Weight stigma can also contribute to binge eating and the development of obesity (Jackson, Beeken, & Wardle, 2014; Wu & Liu, 2015).

Acculturation is a process in which members of one cultural group adopt the beliefs and behaviors of another group (Bharmal et al., 2014). The level of acculturation for Asian-Americans may be related to their body image perception as well as the experience of weight stigma (Guan, Lee, & Cole, 2012).

The purpose of this ongoing study is to examine the relationships between weight stigma, level of acculturation, hair cortisol levels, and binge eating among overweight and obese Asian-Americans.

Methods

- **Study Design:** A cross-sectional design with a convenience sample is being used.
- **Subjects and sample size:** The sample population includes overweight and obese (BMI >23 kg/m²) Asian-Americans (Taiwan, Hong Kong, and China) adults (≥ 21 years of age) living in North Carolina, United States. A total of 161 participants are needed in order to reach a power of .80 with the effect size of 0.12 and α value of 0.05 for the study (Himmelstein et al., 2015).
- **Measurements:** A hair sample, demographic data, height and weight, calculated body mass index and five questionnaires measuring the weight stigma experience, binge eating, the level of acculturation for Asians, the level of perceived racial discrimination for Asians, and levels of perceived stress are being collected. Hair cortisol is being analyzed by using a high-sensitivity enzyme immunoassay (EIA) kit at a Biobehavioral Laboratory in Chapel Hill, North Carolina, United States (Meyer, Novak, Hamel, & Rosenberg, 2014).
- **Procedures:** Participants are being recruited by ads posted on the electronic billboard of three Asian association websites. Potential participants are being contacted the investigator by telephone or email and are being screened. Eligible individuals are being scheduled for group data collections at church sites and the Biobehavioral Lab. The protocol for this study was reviewed and approved by the Institutional Review Board at the University of North Carolina at Chapel Hill.
- **Data Analysis:** The data will be analyzed using SAS 9.3 (SAS Institute Inc., 2014). Descriptive statistics will be used to provide the mean and standard deviation. Pearson correlation analysis will be used to determine the relationships among continuous variables. Multiple regression analyses will be used to determine the associations between the experiences of weight stigma (independent variable) and hair cortisol levels and binge eating (dependent variables) after statistically controlling for the level of perceived racial discrimination for Asians and the level of perceived stress (control variables).

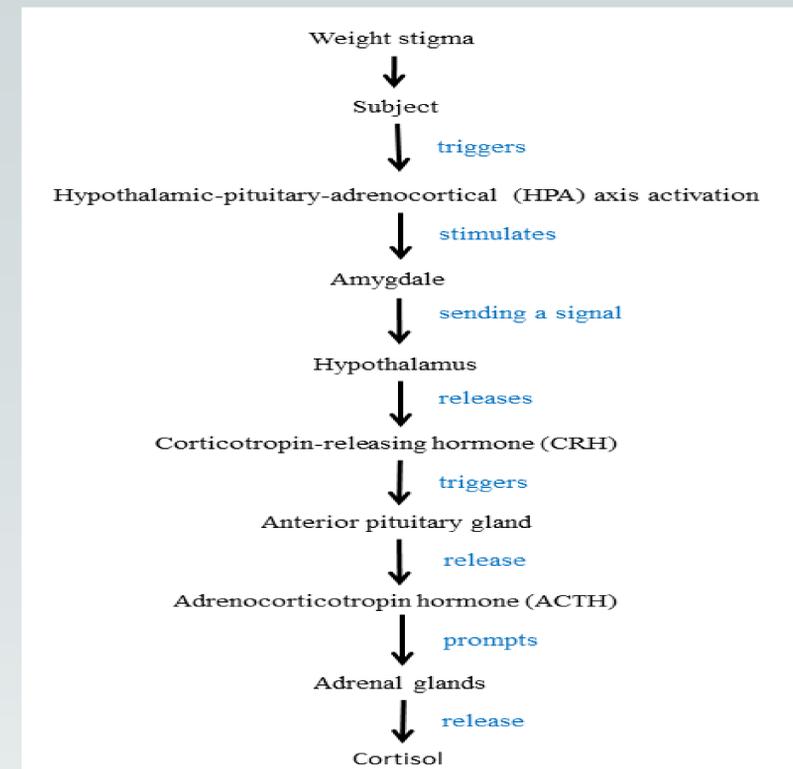


Figure 1. Weight stigma triggers the HPA axis activation and releases cortisol (Elder et al., 2014; Kolb & Whishaw, 2006; Ranabir & Reetu, 2011).

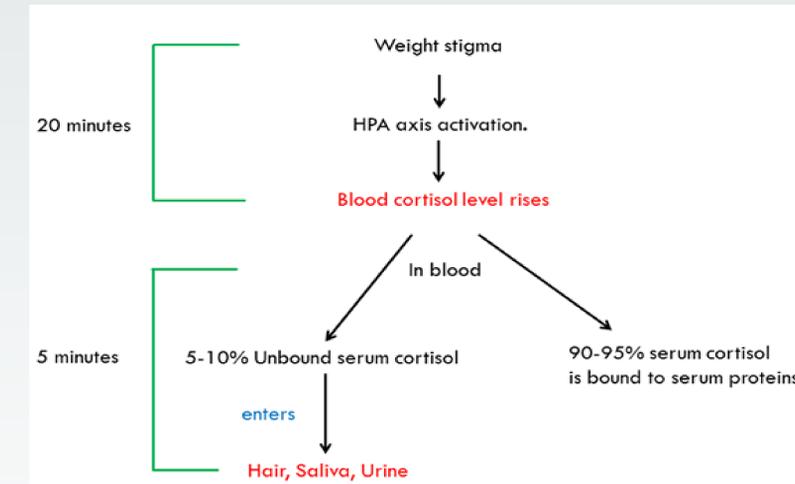


Figure 2. The cortisol pathway (Elder et al., 2014; Kolb & Whishaw, 2006; Ranabir & Reetu, 2011; Turpeinen & Hamalainen, 2013).

Conclusion

This will be the first study to explore the relationship of weight stigma, acculturation levels, cortisol levels, and binge eating simultaneously for overweight and obese Asian-Americans. If this relationship is found, it could have a major impact on future interventions for Asian-Americans who experience weight stigma and who do the stigmatizing. The results from this proposal could help us to build a theory-based intervention to decrease weight stigma. Once a future intervention is tested for feasibility and efficacy, the intervention could be shared in Asian-American community centers. The development of interventions to improve the lives of overweight and obese Asian-Americans is an important public health goal.