

**Who Defines Our Body Image?**  
**The Relationship of Socioeconomic Status with Body Mass Index in Japan**

Gao Mingrou  
Graduate School of Letters  
Kyoto University

1. Introduction

Body image is defined as a person's self-perception of one's own body. However, the internal body image--which is a psychological issue, are inextricably linked with the sociological external body image.

As is well-known, beautiful body being a sociological issue, is largely defined by the higher class, then spread to the whole society, and it will change over time. Therefore, body image and the pursuit for the “ideal” body are to some extent associated with social classification. Higher class tells the society that their body shape is the most desirable and the best. Then they will try their best to penetrate and maintain this aesthetic appreciation, using media. Those outside their body standard will be considered a stigma, and possibly be socially isolated.

Under the pressure of the "ideal" external body image, people may try to control their body image, to make it more attractive. However, this is not such easy. Due to lack of enough income and information (associated with education), lower class may be forced to suffer from the stigma and unequal judgement about their “unhealthy” food consumption or lifestyle. In the meantime, this kind of “asymmetry” is also the strategy of the higher class—only higher can be the “ideal”. So the difference in body shape is highly possible to be a type of social distinction.

However, social norm as a whole, influences all society members with no mercy. Not only lower class, every class has the chance to encounter with the gap between dieting efforts and terrible unexpected outcome, which may cause mental diseases or severe eating disorder.

Different societies also show different preferences for beautiful body image. Higher class family in developing country has higher child obesity rate, while in the developed country, higher income is linked with lower obesity rate.

For example, the Tang dynasty or the Tang Empire, an imperial dynasty of China, the highest government preferred some little fatty women. The most beautiful woman at that time, was Yang Yuhuan, known as Yang Guifei. Yang was famous for having a larger figure, in an era of Chinese history where such body types are preferred. From the modern-day description of Yang's physical size, we can find that she has been variously described as “rotund”, “well rounded”, “full-bodied”, “portly” and sometimes “obese” (Wikipedia). It was a time when most people could hardly feed on themselves—only the richest were able to be luxurious. Even in modern days, some Chinese consider

their overweight bodies to be beautiful and be unwilling to lose weight for health. They used to be unprivileged, so they are proud of becoming fat, because it is a sign of getting rid of poverty.

On the contrary, in the United States, obesity is a major issue. Three in five members of the adult population are estimated to be currently overweight (BMI is 25.0 to <30), and one in five is estimated to be obese (BMI is 30.0 or higher). Since the 1970s, rates of obesity have risen dramatically. Although the United States is often considered as a paradigm example of the obesity epidemic, this pattern is common across most western countries and is now being replicated in emerging economies like India and China. Obesity was once fairly restricted to economically well-off, but is becoming more prevalent in the poor of the developed world. Finally, those in the developing world are now catching up. A study shows that the burden of nutritional problems is shifting from energy imbalance deficiency to excess among older children and adolescents in Brazil and China, thus the prevalence of overweight will be increasing (Wang et al. 2002).

It is something different from the Tang dynasty. Obesity and overweight result from the high-calorie food, like fried chicken, full of meat and other apparently unhealthy food—which are cheaper than healthier food, like fresh vegetables and fruits, instead of wealth. In the developed world, only the rich can afford green food, or precisely, are willing to do so. The poor can get easy contentment with lots of meat and oversupply of calories. In the United States, processed foods, high in sugars, fats, and salt, are often cheaper than fresh or unprocessed foods. That may be the reason why vegetarian becomes a symbol of rich.

Japan may be an “alien” in developed world. In Japan, you can see few obese people in the streets, but lots of likely-underweight people. The drug stores are overwhelmed by dieting products. The super stars are mostly thin, with less fat and muscles. It seems that in Japan, slim body is the ideal, sometimes even thinner is better. Meanwhile, eating disorder is an extreme problem in Japan. A survey about women’s dieting and eating disorder shows that, 13.63% of the respondents are underweight, while 2.75% are overweight. Most importantly, in Japan, 90% of the sufferers of eating disorder are female, and many begin at their adolescence. Why is there a gender difference? Is it something associated with socioeconomic status? What are the definition of the ideal body image by higher class in Japan? Is the lower class more likely to be overweight or underweight? Does the education make a difference?

Using the data of Japanese Life Course Panel Surveys for the Middle-aged (JLPS-M), wave1-8, from 2007 to 2014, this study tries to find out what the higher class defined “ideal” body shape is at present, and how the socioeconomic status affects the Body Mass Index(BMI) in Japan.

## 2. Previous Studies

### 2.1 Body image

Body image is defined as a person's self-perception of one's own body. Internal body image

refers to the way someone feels about one's own body. External body image is how others perceive and react to bodies. However, the internal body image--which is a psychological issue, are inextricably linked with the sociological external body image. And sometimes, there exists a disconnection or misunderstanding between what is perceived, and how the body publically appears, related to some sociological factors. People absorb "ideal" and stigmatized images of different bodies through their friends and family, or via media including television, magazines, and the Internet (Thompson & Kaplan, 2014). Particularly people are handily influenced by various advertisements, which are ingeniously designed by the power—big markers trying to swallow your money, clever politicians aiming at your vote. It may "help" enlarging the gap between your actual body image and the "ideal", as it is overwhelmed everywhere. It is hard to escape from that stigmatized body images—few can make it, so people may suffer social penalty, like lower wage (Chen 2012), or mental illness, like eating disorder.

An eating disorder is a mental disorder defined by abnormal eating habits that negatively affect a person's physical or mental health. Binge eating disorder that people eat a large amount in a short period of time, anorexia nervosa that people eat very little and thus have a low body weight, bulimia nervosa that people eat a lot and then try to rid themselves of the food, are common types of eating disorder (Wikipedia). It may come from the desire to be slimmer, from the fear to be fatter, or from the disability to recognize one's body image. Therefore, eating disorder is a special kind of cognition distortion. Young women are more likely to have eating disorder (三宅ほか 2015).

## 2.2 Body image and gender

The ranges of appropriate body sizes and shapes are highly cultured and gendered. People are expected to be their feminine and masculine body ideals, which are based on cultures and social norms. And it is often assumed that cultures are produced or largely influenced by the higher class or the dominators.

According to Goffman, the presentation of self as a gendered person is achieved through the use of markers and symbols, including clothing, hairstyles, and jewelry. People manage their interactions with others, using behavior and physical activities considered appropriate for one's sex category (Goffman 1959). Internal and external body image, its size, shape, even color and decoration, is inextricably tied with the essential biological need to consume food as well as the validation of body presentation. Globally in most societies, male is expected to have a body that is muscular, hairy, large, tall, and solid, while a female, is expected to have a body that is small, slender, smooth, hairless, petite, and slight. Those falling outside of the gendered descriptions of body size and appearance are often in the challenging position of changing, controlling, starving, or enhancing their bodies for the preferred male or female presentation of self. However, female is more likely or more willing to diet for an ideal body, therefore, more likely to suffer from physical and psychological pain. According to a survey in Japan, nearly 70% of respondents have experienced dieting, and female respondents are 1.4 times

more than male (ロンザジジャパン株式会社 2010). As mentioned above, young women are more likely to suffer eating disorder.

### 2.3 Body image and class

Class is a key determinant of access to services and social goods. At the same time, it is also associated with education and asset ownership. Karl Marx addressed the issue of class from the perspective of who owns the means of production in society. For Max Weber, class was determined by more than asset ownership. He considered social class as the result of the interplay between economic standing, status or prestige (referring to how individuals are esteemed or evaluated in a given social context), and power (referring to that which allows individuals to get their way in society) (Thompson & Kaplan, 2014).

Nowadays, social class is typically seen in three categories: low, middle, and high. Low social class is associated with greater levels of social deprivation, lower levels of education, and less access to basic commodities. The low-class classification can be composed of those that are employed but earning very low salaries and those who are unemployed, destitute, and without a home to live or shelter. Middle-class individuals are associated with white collar, office occupations, and with higher levels of formal education and income, compared to the low social class. Finally, individuals classified as higher classes have even higher incomes, higher educational degrees, and more prestigious occupations (Thompson & Kaplan, 2014). In Marx's views, the higher class or elites have control over means of production, so that the low-class will be exploited for life time, unless there is a revolution.

At a basic level, social class affects the types and availability of what people consume, and how food is consumed. It is easy to imagine that the poor eats the worst while the rich has the best and most. According to Pierre Bourdieu, aside from differences in economic and socioeconomic asset ownership, classes distinguish themselves through different tastes reflected in different consumption patterns, which are influenced by their purchasing power. In *Distinction*, Bourdieu studied taste and preferences across different classes in French society. Among his findings, the taste of the higher classes often dominates the taste of the whole society, defining what is tasteless, tacky, or undesirable. Members of different social classes distinguish one another based on different things they own and acquire. Since members of the high class dictate the preferred taste, those in lower classes will aspire to emulate the taste of those in the high class (Bourdieu 1984).

For sociological studies, the socioeconomic status (SES) is the typical measurement of social class.

### 2.4 BMI

Body mass index (BMI) is one of the most commonly used measures to quantify the amount of tissue mass (muscle, fat, and bone) in an individual, and then categorize that person as underweight

(BMI is under 18.5), normal weight (BMI is 18.5 to <25), overweight (BMI is 25.0 to <30), or obese (BMI is 30.0 or higher) based on that value. The BMI or Quetelet index is a value derived from the mass (weight) and height of an individual, defined as the body mass divided by the square of the body height. The BMI is generally used as a means of correlation between groups related by general mass and can serve as a vague means of estimating adiposity. It is a satisfactory tool for measuring whether sedentary individuals are underweight, overweight, or obese. Also, the growth of a child is documented against a BMI-measured growth chart. Obesity trends can then be calculated from the difference between the child's BMI and the BMI on the chart. In the United States, BMI is also used as a measure of underweight, owing to advocacy on behalf of those with eating disorders, such as anorexia nervosa and bulimia nervosa (Wikipedia).

## 2.5 BMI and socioeconomic status

There are some studies trying to find out the relationship between BMI and socioeconomic status (SES). Robert & Reither examined the contributions of both individual SES and community disadvantage in explaining the higher BMI of black adults in the United States. They found that black women had a higher age-adjusted BMI scores than non-black women. Individual SES was negatively associated with BMI in women. Community income inequality had an independent positive association with BMI (Robert & Reither 2004). Mujahid et al. found that individual and neighborhood socioeconomic characteristics were independently and inversely associated with BMI at baseline in women. Baseline BMI was negatively associated with income in white men but was positively associated with education, income, and neighborhood characteristics in black men (Mujahid et al. 2005).

Parent's SES also matters. Martin et al. examined how poverty and education in both the family and school contexts influenced adolescent weight. They found that at the family level, parent's education was associated with adolescent overweight. At the school level, the concentration of poverty within a school was associated with adolescent overweight (Martin et al. 2012). Singh et al. examined independent and joint association between socioeconomic, demographic, and behavioral characteristics and childhood and adolescent obesity in United States. They found that ethnic minority status, non-metropolitan residence, lower SES and social capital, higher television viewing, and higher physical inactivity levels were all associated with higher obesity prevalence (Singh et al. 2008).

A study also confirmed that the price of fast food but not the availability of fast food had a statistically significant effect on teen BMI. It also showed the evidence that the weight of teens in low-to-middle SES families was most sensitive to fast food prices (Powell 2009). Ailshire & House examined social disparities in body mass index trajectories during a time of rapid weight gain in the United States. Results revealed that among individuals who aged from 25-39 to 45-54 during the study interval (1986-2001/2002), low-educated and low-income black women experienced the greatest

increase in BMI, while high-educated and high-income white men experienced the least BMI growth (Ailshire & House 2011).

However, Zhang & Wang found that from 1971 to 2000, the association between SES and obesity had been weakened, when the prevalence of obesity increased dramatically (Zhang & Wang 2004).

### 3 Data and Methods

Body image contains many aspects and are somewhat subjective, so it is hard to measure whether a body is desirable or not through statistics method. Therefore, this study will utilize BMI to measure one's body shape, then from the body shape to further know whether this person fits the aesthetic preference in nowadays Japan.

This study will first try to find out the preferences for body images in present Japan from open internet surveys. Then this study will examine whether there is an independent association between individual SES and BMI, and to examine whether people with higher SES will fit the ideal body image better than the lower class.

This study will use the data of Japanese Life Course Panel Surveys for the Middle-aged (JLPS-M), wave1-8, from 2007 to 2014. The middle-aged panel survey is based on questionnaire research, and focuses on male and female residents in Japan aged between 35 and 40. The questionnaire research was conducted in January through March, 2007. The respondents were selected from the Basic Resident Registration through a stratified sampling method based on age and gender. The researchers mailed a questionnaire package to each of the potential respondents, along with a note stating that the respondent would also be requested to participate in follow-up surveys. Subsequently, the research staff collected the completed questionnaires by visiting the respondents individually<sup>1</sup>.

The using of multiple regression model will be suitable for the analysis. The sample size is 1433. The final sample is 1078.

#### 3.1 Explanatory variable

The explanatory variable, or independent variable is socioeconomic status (SES). SES is commonly an economic and sociological combined total measure of a person's work experience and of an individual's or family's economic and social position in relation to others, based on income, education, and occupation (Wikipedia). As mentioned above, SES is a measurement for social class.

This study will estimate individual SES, from the aspects of individual income, educational attainment, work status. This study will use the following questions in the questionnaire to score the individual SES.

---

<sup>1</sup> See the homepage of the Center for Social Research and Data Archives, Institute of Social Science, The University of Tokyo. <https://csrda.iss.u-tokyo.ac.jp/en/panel/overview/>

Question 2. Do you usually have a job that generates income? (including student part-time jobs)

1. Yes, I have a job.
2. No, I don't have a job.

Question 23. Among the following, which school did you attend most recently (including your current school)? Please circle the most appropriate response.

1. Middle school
2. High school
3. Technical school (vocational college)
4. Two-year college (associate's college)/College of technology (five-year system)
5. Four-year university (bachelor's degree)
6. Graduate school

Question 36. This question asks about your income of the past year. Approximately what is your individual income? Please include secondary and provisional (temporary/special) income.

1. None
2. Less than 250,000 yen
3. About 500,000 yen (250,000 to not more than 750,000 yen)
4. About 1,000,000 yen (750,000 to not more than 1,500,000 yen)
5. About 2,000,000 yen (1,500,000 to not more than 2,500,000 yen)
6. About 3,000,000 yen (2,500,000 to not more than 3,500,000 yen)
7. About 4,000,000 yen (3,500,000 to not more than 4,500,000 yen)
8. About 5,000,000 yen (4,500,000 to not more than 6,000,000 yen)
9. About 7,000,000 yen (6,000,000 to not more than 8,500,000 yen)
10. About 10,000,000 yen (8,500,000 to not more than 12,500,000 yen)
11. About 15,000,000 yen (12, 500,000 to not more than 17,500,000 yen)
12. About 20,000,000 yen (17, 500,000 to not more than 22,500,000 yen)
13. 22,500,000 yen or more
14. Don't know

### 3.2 Dependent variable

The dependent variable is BMI. In the questionnaire of JLPS-M Wave3, respondents were asked about their current height and weight. This study counts the individual BMI through the equation

$$\text{BMI} = \frac{\text{mass kg}}{\text{height}^2 \text{ m}}$$

### 3.3 Control variables

Referring to the previous studies, this study will control the effect of gender, age, marriage, place of residence to figure out the independent effect of individual SES.

#### 4 Results

Table 1 presents the variables used in the study, as well as their descriptions and summary statistics.

Table 1 Variable descriptions and summary statistics

Variable	N	Mean	SD	Min	Max
BMI	1078	22.50	3.40	15.55	39.04
Income	1078	330.87	283.08	0	2000.00
Education	1078				
Middle school (reference category)	17				
High school	383				
Undergraduate	642				
Graduate	36				
Work status	1078	1.14	0.35	1At work	2Unemployed
Gender	1078	1.55	0.50	1Male	2Female
Age	1078	40.45	1.66	38.00	43.00
Marriage	1078				
Married (reference category )	814				
Single	206				
Divorced or widowed	58				
Residence	1078				
Very big city	268				
Big city	315				
Small city	391				
Country (reference category)	104				

First, this study tries to find out what the ideal body shape in present Japan. In an open survey<sup>2</sup> in the twitter, which was aimed at Japanese men, users were asked about which type of woman's body out of four kinds they liked best. The four types were X-type, I-type, A-type, O-type. X-type means the woman is glamorous, with the emphasis on sexuality. This kind of women may look like an apple if they gain fat. I-type means the women is slender and apparently skin-feeling with little fat. A-type means that the upper part of body is plain, while the lower part is a little rounded. This kind of women may look like a pear if they gain fat. O-type means the woman looks rounded. Over 270,000

<sup>2</sup> <https://twitter.com/plus15/status/911923551577423873>

twitter users were involved and voted for their favorite and feeling most attractive body shape. According to the results, at least in the internet, Japanese men liked the I-type most (35%), the second was X-type (28%), the third was A-type (22%), the last was O-type (15%). From the internet survey, it is apparent that the Japanese men prefer the slim and slender women to little plump women.

As for Japanese women, their preference for men is a little different. Also according to an informal survey<sup>3</sup>, 200 Japanese women were asked about their type for men's body shape. 78 of them liked those who were slim but muscular. 64 of them liked those with much muscle, looking like an athlete. 35 of them liked slim with little muscle men. 16 of them liked standard body shape. 11 of them liked those who were a little rounded. 10 of them liked normal type (don't know the difference with standard type). Only 6 of them liked rounded men.

From the two survey, it can be found that both Japanese men and women don't like rounded body shape. However, Japanese men like those who are slim with little fat, which means that the woman's BMI should be a little lower. Japanese women like those who are muscled, which means a higher BMI.

The results of multiple regression analysis are presented in the table 2. Because there is a gender difference in BMI, this study also examines the effect of SES on BMI by gender as model2 and model3 separately.

Table 2 results of multiple regression analysis

	Model1	Model2 Male	Model3 Female
	B	B	B
	(SE)	(SE)	(SE)
(Intercept)	22.96*** (2.64)	20.86*** (4.04)	18.89*** (3.73)
Gender	-2.56*** (0.25)		
Work status	0.88** (0.32)	1.08 (0.29)	0.80* (0.35)
Age	0.09 (0.06)	0.07 (0.09)	0.10 (0.08)
Single	0.50* (0.25)	0.71 (0.39)	0.45 (0.36)
Divorced or widowed	-0.33 (0.43)	-0.07 (0.73)	-0.37 (0.54)

<sup>3</sup> <https://mengym.net/moteo/5573>

Income	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
High school	-0.76 (0.79)	-0.76 (0.94)	-1.95 (1.57)
Undergraduate	-0.93 (0.79)	-0.26 (0.93)	-2.64 (1.57)
Graduate	-1.76 (0.95)	-1.14 (1.14)	-3.64* (1.83)
Very big city	-0.74* (0.37)	-1.27* (0.57)	-0.32 (0.49)
Big city	-0.26 (0.36)	-0.93 (0.54)	0.33 (0.48)
Small city	-0.65 (0.35)	-0.93 (0.53)	-0.39 (0.47)
Adjusted $R^2$	0.14	0.01	0.03
N	1078	486	592

\*Significant at the 0.05 level.

\*\*Significant at the 0.01 level.

\*\*\*Significant at the 0.001 level.

According to table 2, in model1, when male and female are put into the model together, there is a significant gender difference, which means female tends to have a lower BMI than male. Also, whether the person is at work is significantly associated with BMI. Those who are unemployed have a slightly higher BMI than those having a work. Compared to those who are married, single person may have a slightly higher BMI. Also, compared to those living in the country, those living in a very big city are expected to have a lower BMI. Age, whether at work, whether divorced or widowed, income, education, whether living in a big city or small city shows no significant association with BMI.

In model2, where only Japanese males are analyzed, only living in a very big city is significantly associated with lower BMI. For male, age, marriage, income, education, whether living in a big city or small city shows no significant association with BMI.

In model3, where only Japanese females are analyzed, whether she is employed shows a significant association with BMI. Females who are unemployed have a slightly higher BMI than those having a work. Compared with those who are graduated from middle school, females who have attended a graduate school tend to have a much lower BMI. For female, age, marriage, income, whether graduated from a high school or undergraduate, size of place of residence, shows no

significant association with BMI.

## 5 Discussion

This study aims to find an association between body image and social class. From the two internet surveys, it can be concluded that both Japanese men and women prefer a slimmer or slender spouse to a rounded one. Through the multiple regression analysis, work status, gender, marriage, size of place of residence, show a limited association with BMI. For male, only the place of residence shows a difference. Therefore, it is hard to conclude that socioeconomic status is associated with lower BMI for Japanese male. For female, the effect of SES is larger, as the work status and education show a limited effect on a lower BMI. That is to say, female with higher socioeconomic status may fit the preference of ideal body shape better than those with lower socioeconomic status.

Therefore, this study can conclude that there is an association between social class and BMI. According to the interviews for those voting women on the internet, they said that Japanese women consider more “real” things than men, and the body shape was not the most important factor when selecting a spouse. Maybe it is the reason why there is not significant difference between social classes on BMI for Japanese men.

## References

- Ailshire, Jennifer A., & James S. House, 2011, “The Unequal Burden of Weight Gain: An Intersectional Approach to Understanding Social Disparities in BMI Trajectories from 1986 to 2001/2002” *Social Forces* 90(2):397–423
- Bourdieu, Pierre, 1984, *Distinction-A Social Critique of the Judgement of Taste* Harvard University Press
- Chen, Alice J., 2012, “When does the weight matter most?” *Journal of Health Economics* 31:285-295
- Goffman, Erving, 1959, *The Presentation of Self in Everyday Life* University of Edinburgh Social Sciences Research Centre.
- Martin, Molly A., Michelle L. Frisco, Claudia Nau, & Kristin Burnett, 2012, “Social stratification and adolescent overweight in the United States: How income and educational resources matter across families and schools” *Social Science & Medicine* 74:597-606
- Mujahid, Mahasin S., Ana V. Diez Roux, Luisa N. Borrell, & F. Javier Nieto, 2005, “Cross-Sectional and Longitudinal Associations of BMI with Socioeconomic Characteristics” *Obesity Research* 13(8):1412-1421
- Powell, Lisa M., 2009, “Fast food costs and adolescent body mass index: Evidence from panel data” *Journal of Health Economics* 28:963-970
- Robert, Stephanie A., & Eric N. Reither, 2004, “A multiple analysis of race, community disadvantage, and body mass index among adults in the US” *Social Science & Medicine* 59:2421-2434

- Singh, Gopal K., Michael D. Kogan, Peter C. Van Dyck, & Mohammad Siahpush, 2008, "Racial/Ethnic, Socioeconomic, and Behavioral Determinants of Childhood and Adolescent Obesity in the United States: Analyzing Independent and Joint Associations" *Annals of Epidemiology* 18:682-695
- Thompson, Paul B., & David M. Kaplan, 2014, *Encyclopedia of Food and Agricultural Ethics* Springer Netherlands
- Wang, Youfa, Carlos Monteiro, & Barry M Popkin, 2002, "Trends of obesity and underweight in older children and adolescents in the United States, Brazil, China, and Russia" *The American Journal of Clinical Nutrition* 75:971-977
- Zhang, Qi & Youfa Wang, 2004, "Trends in the Association between Obesity and Socioeconomic Status in U.S. Adults: 1971 to 2000" *Obesity Research* 12(10):1622-1632
- ロンザジャパン株式会社, 2010. 「男女の意識はこんなに違う！？ダイエットに見られる男女の差 ダイエットの経験・意識に関する調査」
- 三宅典恵, 岡本百合, 神人蘭, 志々田一宏, 岡本泰昌, 2015, 「摂食障害」『BRAIN and NERVE－神経研究の進歩』 67(2):183-192