



# The assessment of possible parental effects on BMI status of university students

Yan-Han Yu, Jun-Ting Chen, Shwu-Huey Yang\*

School of Nutrition and Health Sciences, Taipei Medical University



## Introduction

The global epidemic of overweight and obesity - "globesity" - is rapidly becoming a major public health problem and further, the new burden in many parts of the world. World Health Organization (WHO)'s previous data release indicates that in 2005 more than 1 billion adults were overweight globally and at least 300 million of them obese. In the dimension of disease prevention, overweight and obesity are of the top awareness for they pose a major risk for chronic diseases, including type-2 diabetes, cardiovascular diseases, hypertension, stroke, and certain type of carcinoma. The dramatic shift in diet pattern and trend towards sedentary life style take place while genetic predisposition lies underneath. The purpose of this study is to assess the possible relationship between parental BMI and the BMI status of their off-spring using their anthropometric measurements.

## Materials and methods

### Subject characteristics

A total sample of 160 college students were recruited from class 2004 and 2005, aged 20 ~22 yrs, in the School of Nutrition and Health Sciences at Taipei Medical University in March, 2007 and 2008.

### Anthropometric data

The BMI of students and their parents was calculated from self-reported weight and height for both classes but the perceived anthropometric status and current living arrangements were collected from 69 junior students in class 2005.

### Statistical analysis

The prevalence of overweight and obesity was calculated and the relative risk referring to acceptable parental weight as the reference category was used to describe the association of offspring overweight between different parental overweight status.

## Results and discussion

### Weight status of participants

The ratios for being within ideal BMI range shown in table 1 demonstrated that the female subjects in both populations were more likely to stay in normal weight status than their male counterparts and the idea of gender discrepancy in prevalence of overweight at young and middle age might be suggested.

Table 1 Prevalence of overweight and obesity among parents and Offspring

	Parents		Offspring	
	Male (N=160)	Female (N=126)	Male (N=34)	Female (N=126)
	Total (N=320)		Total (N=160)	
	N (%)		N (%)	
Overweight <sup>a</sup>	115 (35)		16 (10)	
Male	77 (48)	8 (24)		
Female	38 (24)	8 (6)		
Obesity <sup>a</sup>	36 (11)		4 (3)	
Male	24 (15)	2 (6)		
Female	12 (8)	2 (2)		
Within ideal BMI range <sup>b</sup>	205 (64)		144 (90)	
Male	83 (52)	26 (76)		
Female	122 (76)	118 (94)		

<sup>a</sup> Overweight and obese, BMI: 24.0(kg/m<sup>2</sup>) and >27.0(kg/m<sup>2</sup>) .

<sup>b</sup> Ideal BMI range, 18.5~24.0(kg/m<sup>2</sup>).

(Department of Health, Executive Yuan, R.O.C)

Table 2 Self-perceived and actual anthropometric status of students in class 2005

	Actual status/ self-perceived status	
	N (%)	
Obese <sup>a</sup>	2/10 (20)	
Overweight <sup>b</sup>	3/17 (18)	
Of acceptable weight <sup>c</sup>	33/37 (89)	
Underweight <sup>d</sup>	3/5 (60)	

<sup>a</sup> Obese, BMI > 27.0(kg/m<sup>2</sup>).

<sup>b</sup> Overweight, BMI > 24.0(kg/m<sup>2</sup>).

<sup>c</sup> Within the ideal BMI range, 18.5~24.0(kg/m<sup>2</sup>)

<sup>d</sup> Underweight, BMI < 18.0(kg/m<sup>2</sup>) (Department of Health, Taiwan).

Table 3 Current living arrangements of students in class 2005

	No. subjects overweight/ total	
	N (%)	
Living on campus (dorm)	1/5 (20)	
Living off campus (house rentals)	0/14 (0)	
Living with family members <sup>a</sup>	7/50 (14)	

<sup>a</sup> Immediate family members or relatives

### Relative risk of offspring overweight

Table 4 shows the risk of offspring overweight according to different parental overweight status relative to the risk that both parents are of acceptable weight. The relative risk for having an overweight offspring was 4 times higher with both parental overweight than either parental overweight. The data also demonstrated that the relative risk of offspring overweight in overweight mothers had a 50% increase compared with paternal overweight. This finding might be pointed to a possible difference of gender disparity on parental BMI effect.

Table 4 Relative risk of offspring overweight<sup>a</sup> according to parental weight status

	No. subjects overweight/ total		Relative risk
	N	%	
Both parents are of acceptable weight <sup>b</sup>	5/72	7	1
Either parental overweight	6/75	8	1.2
Paternal overweight	10/77	13	1.9
Maternal overweight	8/39	21	3.0
Both parental overweight	6/20	30	4.3

<sup>a</sup> Overweight, BMI > 24.0(kg/m<sup>2</sup>) .

<sup>b</sup> Within the ideal BMI range, 18.5~24.0(kg/m<sup>2</sup>).

(Department of Health, Executive Yuan, R.O.C)

## Conclusion

The findings of this study illuminate the synergistic idea that leads to overweight and obese and suggest that overweight parents are more likely to have overweight offspring than parents of acceptable weight. It's important to know that parental effect contributes partly to genetic components, while several other environmental factors, such as the lifestyle and diet patterns of the family, parental food preferences and attitudes, and the behaviors of parents and siblings should be lumped together to draw a more comprehensive effect.