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－在留中国人研究者研究助成－

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1. 研 究 テ ー マ 中国北京市都市部における学童肥満の原因に関する調査

2. 本年度の研究業績

(1) 学会・研究会等における発表 ☒ 有 無 (学会名・演題)

第 24 回日本肥満学会 2003 年 11 月 千葉 (幕張)

Cross Validation of the new Chinese body mass index cutoffs of children

(2) 学会誌等に掲載した論文 ☒ 有 無 (雑誌名・論文名)

Pediatrics International 2003; 45 (4),400-06.

Feeding practice of infants and their correlates in urban areas of Beijing, China

Liubai Li, Sujun Li, Moazzam Ali, Hiroshi Ushijima.

3. 今後の研究計画

本研究の結果から 北京市都市部における学童の肥満率は高いと見られる。肥満の発症には先天のおよび後天的要因が関与している。生活習慣などの後天的な要因は調節できるので 今後の研究の主な課題になる。現在の生活環境こそが子どもたちを過食と身体活動不足に追い込んでいることを十分に認識する必要がある。更に できれば今の生活環境を変えるか、今の生活環境の中でより良い生活ができて体重が減少する方向に向かうように社会全体で支援することが必要である。今後 介入研究を介して 地域や学校において 子どもの食事、運動、休養といった生活習慣に関わる健康教育を積極的に展開することが研究課題になると考えている。

4. 指導責任者の意見

近年、国際的に児童期からの肥満が問題となり、肥満対策や予防に対する関心が高い。その現状を調査し、栄養指導や教育を行うことは急務と考えられる。従って受領者の研究は重要と考えられる。受領者は研究態度がまじめで、研究は大幅に進んでいる。特に本研究で検討した子ども用身体活動量と食事調査のアンケートは、将来中国の肥満の研究にも貴重な基礎資料になる。本研究のデザイン、方法、得た研究結果等は、今後の中国の児童肥満の予防に貢献できると思われる。

指導責任者氏名

牛島廣治 (印)

5. 研究報告書

別紙「研究報告書の作成について」に倣い、指定の用紙で作成して下さい。

研究発表または研究状況を記録した写真を添付して下さい。

※研究成果を発表する場合は、発表原稿・抄録集等も添付して下さい。

※発表に当っては、日中医学協会助成金による旨を明記して下さい。

中国北京市都市部における学童肥満の原因に関する調査

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Abstract:

The present study aimed to examine the potential risk factors of childhood obesity in Beijing urban areas and elucidate the correlates of physical activity and healthy eating.

A cross-sectional study was conducted from July, 2003 to October 2003 in two primary schools in Beijing urban areas. A total of 1687 6-12 year old students were recruited. Mothers and some of the children in 4th-6th grades administered questionnaires relating to the potential correlates. Anthropometric measurement of weight, height and percentage of body fat (%BF) of the students were performed. Body mass index (BMI) [BMI = weight in kg/(height in metres)²] cutoff values recommended by the International Obesity Task Force (IOTF) were used to discriminate overweight and obesity. Multiple Logistic Regression Analysis was used to determine the independently associated risk factors. The results shows that the prevalence of overweight and obesity in 6-12 year old boys were 20.0% and 20.3%, and for girls were 19.0% and 13.0% respectively, according to the new BMI cutoffs for Chinese children. (Versus 19.9% and 13.3% for boys as well as 12.0% and 4.8% for girls respectively according to the BMI cutoffs recommended by IOTF). Overweight and obesity was significantly correlated to sex (for girls, Odds Ratios (OR)=0.3, and 95% confidence interval (CI): 0.15-0.58, $p<0.01$), height (OR=1.03, 95%CI: 1.00-1.07, $p<0.05$), and the average value of parents' BMI (OR=1.35, 95%CI: 1.15-1.60, $p<0.01$). The healthy lifestyles were significantly correlated to some psychosocial factors (Pearson coefficient r ranged from 0.20 to 0.37). The result suggested that health educations related to healthy eating and physical activity need to be implemented in the schools.

Key Words obesity, risk factor, healthy eating, physical activity

Introduction:

The prevalence of child obesity is increasing rapidly worldwide.¹ It is associated with several risk factors for later life^{2,3,4} In recent years, the prevalence of childhood obesity in China, especially in urban areas increased rapidly, and the factors that account for the rapid changes in prevalence remain unclear.⁵ The present study aimed to examine the potential risk factors of childhood obesity in Beijing urban areas and elucidate the correlates of physical activity and healthy eating, for providing baseline data for the accomplishment of disease control and prevention.

Subjects and Methods:

A cross-sectional study was conducted from July, 2003 to October 2003 in two primary schools in Beijing urban areas. A total of 1687 6-12 year old students were recruited. A self-administered questionnaire were used to obtain information relating to social economic status (SES), perinatal factors, and the present lifestyles of children. Mothers provided all the information for the children in 1st-3rd grades. Students in 4th-6th grades administrated a questionnaire relating to present lifestyle as well as its the correlates. Anthropometric measurement of weight, height and percentage of body fat (%BF) were performed while the children were wearing light clothing and no shoes. Weight and %BF were measured with a single-frequency tetrapolar plethysmograph (TBF-126, TANITA, Tokyo, Japan). Height was measured with a fixed height measuring board. Body mass index-calculated as weight in kilograms divided by the square of height in metres provides a measure of fatness [$BMI = \text{weight in kg} / (\text{height in metres})^2$]. BMI cutoff values recommended by IOTF were used to discriminate overweight and obesity. Statistical analyses were performed using SPSS version 10.0 for Windows (SPSS Inc., Chicago, IL, USA). Multiple Logistic Regression Analysis was used to determine which factors were mostly and independently associated with the outcomes of interest. $P < 0.05$ was the cut point for significance. The relative risks of possible risk factors were estimated by the calculation of Odds Ratios (OR) and 95% confidence intervals (CI).

Results:

The average age of the boys was 8.91 years (SD=1.52), and 8.82 years (SD=1.55) for girls. The age distribution was shown in Table 1. The prevalence of overweight and obesity in 6-12 year old boys were 19.9% and 13.3%, and for girls were 12.0% and 4.8% respectively, according to the new BMI cutoffs recommended by IOTF. For the correlates of childhood obesity, after adjusted for other potential correlates, the result of Multiple Logistic Regression Analysis shown that high height and high BMI value of parents were risk factors for predicting overweight and obesity; boys were more tend to become overweight than girls at this age group. Frequencies of cake intakes per week was not shown as a risk factor.

The results were shown in Table 2.

Table 1. Characteristics of the subjects (N=1687)

Age (Year)	Male (N=841)		Female (N=846)	
	n	(%)	n	(%)
6	32	3.8	40	4.8
7	158	18.8	162	19.1
8	150	17.8	178	21.0
9	184	21.9	155	18.3
10	162	19.3	161	19.0
11	138	16.4	138	16.3
12	17	2.0	12	1.5

The correlates for vegetable and fruit intakes and physical activity were found significantly correlated to some psychosocial factors. For vegetable and fruit intakes, the availability of vegetables and fruits at home was the most important determinants for intakes (Table 3). The intension and frequencies physically activities strongly correlated to self-efficacy, social support and health believes (Table 4).

Table 2. Risk factors correlated to being overweight and obesity (n=495)

Correlates	OR	95%CI
Gender (Female)	0.30	0.15-0.58 **
Height	1.03	1.00-1.07*
Average BMI of parents	1.35	1.15-1.60**
Sweet cake eating (times/week)	0.83	0.72-0.95**

* P<0.5; ** P<0.01

Table 3. The pycho-social correlates for healthy eating
(vegetable and fruit intakes)

Correlates	n	Pearson coefficient (r)	P Value
Availability	136	0.32	P<0.01
Self-efficacy for healthy eating	134	0.28	P<0.01
Perceived benefit	137	0.24	P<0.01
Taste preferences	134	0.24	P<0.01
Social support	137	0.20	P<0.05

Table 4. The psycho-social correlates for physical activity (n=228)

Psycho-social factors	Intension	Times/week
Self-efficacy	0.46**	0.37**
Social support	0.25**	0.35**
Health believes	0.24**	0.29**

** P<0.01

Summary:

The present study used the new BMI cutoffs of children recommended by the IOTF, this enabled the prevalence to be internationally comparable. The prevalence of overweight and obesity was relatively high in Beijing urban areas. Boys were more tend to be overweight and obese than girls in this age, and the height and parents' BMI were independently correlated to being overweight and obesity. This result was accordant to the previous study and the reason needs further study. Cake intakes did not show as a risk factor may be related to the behavior change after becoming obese.

The underlying psycho-social factors in healthy eating and physical activity was seldom reported in Chinese children. The present study shown that the self-efficacy of healthy eating and physical activity were moderately correlated to the lifestyle. This result suggested that the health education tend to increase self-efficacy may be effective among Chinese children. On the other hand, social support for healthy eating and physical activity need to be increased in the future.

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