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SURVEY ON THE RELATIONSHIP BETWEEN PARENT SOCIOECONOMIC STATUS AND PRESCHOOL CHILDREN GROWTH IN AHVAZ CITY 2015

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Abstract:
Introduction:
One of the non-genetic factors that affect children growth is parent socioeconomic status, so exact determination of each one of factors such as father education, mother education, maternal work outside the home and monthly income is effective on children height growth and weight gain. It also could help us to prevent children growth disorders. This study aimed to investigate the relationship between socioeconomic level of the parents on weight gain and height growth of preschool children in Ahvaz 2015.
Methods:
In this cross-sectional study, the data was obtained using Purposive sampling from 208 children of 3-6 years old that came to a private pediatric clinic in Ahvaz in 2015 regardless of their sex. Measurement of height and weight of all patients with the meter and scale was performed. After measuring height and weight, stature-for- age and weight-for- age percentiles was calculated using child growth chart calculator of CDC (centers for disease control and prevention) for each child. Demographic Information of children and information about parent socioeconomic status were gathered using researcher made questionnaire. Data analysis was performed with descriptive statistic and Kendall's tau statistical test using SPSS24 software.
Results:
The results of this study showed that weight gain is connected to mother`s education (P=0.013) and parent`s income (P<0.048). when the mother`s education and monthly income are higher, children weight gain would be more appropriate. Other variables didn`t affect either the children height growth or weight gain (P>0.05).
Conclusion:
Women with higher education are more succeed in upbringing children with appropriate weight gain. As well as children would have better weight growth by increasing family income level and its direct impact on other aspects such as nutrition status.
Key words: Preschool children, Growth, Parent, Socioeconomic status

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INTRODUCTION:

First years of life are the most important period of growth and development of human being (1). Three index for measuring children growth problems are stunting (low height for age), underweight (low weight for age) and wasting (low weight for height) (2- 3). These problems can be risk factors for children`s morbidity, mortality and lead to unpleasant consequence on different aspects of human life in future (4). For example stunting affects three aspects including health, development and economic in long duration and cause to adult shortness, obesity and it`s negative health consequence, reducing reproductive power, loss of productivity in school, decrease learning ability, decrease working ability and reduce economic output (5).

Growth problem is global issues. According to world health organization (WHO) report, there is approximate 97 million children under 5 years old with underweight and 167 million children under 5 years old who are suffering from stunting in developing countries (6). There is no accurate statistics in this regard in Iran, but study results of Mahyar et al (2010) concerning nutrition status and in Qazvin revealed that 11/7% of children were underweight, 11/5% of them were stunned, and 0/7% of them were suffering from extreme thinness. Growth and development of children under the age of 2 years (7).

Several genetic and environmental factors effect on children growth. Genetic factors such as parent`s height have direct influence on children growth and could predict their adulthood height. It seems genetic factors are more effective in children height growth than weight gain (8-10). Non genetic factors such as birth weight, nutrition status, growth hormone (GH) and diseases also affect children growth (10-13). Socioeconomic level of children family is one other of these non-genetic factors. Children of family with higher socioeconomic level benefit from better nutrition and care. They also receive better medical and social service (15-16).

Many studies have surveyed effect of family socioeconomic level on children and adolescents growth. For example study results of Amegah et al. (2009) on children aged 12 to 23 months old showed that mother education level have a close relationship with children nutrition status, so that children with uneducated mothers are more at risk of underweight. This issue shows importance of mother education effects on children nutrition and health (17).

In a study done by Gur et al. in Turkey in 2006 about effecting factors on growth disorder of children aged 6 to 16 years old showed that there is a significant relationship between underweight and family monthly income. But no relationship was found between not growing and family socioeconomic level (18).

In general, according to the above, it can be said the child's height growth and weight gain in the early years of life has an important impact on his future, so identifying factors which effect on the growth and development of children, especially items such as socioeconomic status of family which less has been discussed in our country, is necessary. Thus, according to these facts and the lack of such a study in the city of Ahvaz, this study aimed to investigate the relationship between socioeconomic level of the parents on weight gain and height growth of preschool children in Ahvaz 2015.

MATERIALS AND METHODS:

Study design and population:

In a cross sectional study, the data was obtained by Purposive sampling from 208 children aged 3-6 years old that came to a private pediatric clinic in Ahvaz, Southwest of Iran in 2015 regardless of their gender. Sample size due to the inclusion and exclusion criteria and based on the conducted pilot study with considering the prevalence of poor socioeconomic status in children with growth disorder (P1=0.72) and in children with normal growth (P2=0.30) and also 95% confidence level and 80% power, by using NCSS software was 208 children. Inclusion criteria include: no underlying physical and mental disease such as diabetes, congenital heart disease, renal disease, attention deficit/hyperactivity disorder (ADHD). Exclusion criteria: include lack of parental permission to participate in the study.

Measuring tools:

Measurement of height and weight of all patients by expert researcher was performed by the same tools(meter from Seca brand made in Germany and scale from Accumed brand, type SYE2010A1 made in china) and with the proposed way by WHO in this specialist clinic for routine (19). After measuring Stature and weight, Stature -for- age and weight-for- age percentiles was calculated using child growth chart calculator of Center for disease control and prevention (CDC) for each child. Children with weight, Stature or both less than the 5th percentile were considered as having growth disorder (20). First of all physical and mental health status of children were investigated through oral questions from parents and also observation of the children`s records.

Information about parent socioeconomic status and child`s demographic information and child`s data on Stature, weight, age and gender were gathered using researcher made questionnaire. The questionnaire was consisted from two parts; the first part include 9 questions about parent socioeconomic status and child`s demographic

information and the second part include 2 questions about Length percentile and Weight percentile. The questionnaire was given to 10 pediatrics faculty members of Medical School and their comments were applied in the questionnaire. To confirm the reliability, questionnaires for 10 children at once were completed by the researcher and researcher assistant. The obtained data was entered in the SPSS-24. Reliability of the questionnaire was confirmed with 0.91 reliability coefficient Cronbach's alpha. P- value- <0.05 was considered.

Ethical considerations:
The Ethics Committee of Ahvaz Jundishapur University of Medical Sciences approved the study (ID number: GP93014) and all of the children parents provided written informed consent. Participation in the study was voluntary and the questionnaires had no name. Data were extracted all the questionnaires, in general.

Data analysis:
Data analysis was performed using SPSS-24 software in the way that to express the frequency of each of the variables, descriptive statistic was used; to measure statistical correlation and also continuity between parent socioeconomic status and height growth and weight gain of children, Kendall's tau statistical test was used.

RESULTS:
The sample size in this study was 208 and during study no attrition was occurred. Finally 208 children aged 3 to 6 years old, were studied. Results of the study showed that 51.4% of subjects were male and 48.6% of them were female. Most of the studied children (41.3%) aged 3 to 4 years old. The majority of weight children were between100-100 cm with percent(46.6%) and length most of them were between 15-20 kg with percent (53.3%). Results showed that 20.2% of children were in 25 to 50 weight percentile and 33.6% of them were in 50 to 75 Stature percentile (**Table.1**).

32 (15.38%) of 208 evaluated children were stunted, underweight or both and 176 (84.6%) of them didn`t had any growth disorder. Results showed that 0.5% of children just were stunted, 5.8% of them just were underweight and 9.1% of them had both disorders (stunted and underweight). The more details are presented in (**Figure.1**).

In this study 208 children were evaluated in which 51.4% of subjects were boys and 48.6% were girls. results of this study showed that of the 208 children that were evaluated 32 of them (15.38%) had height or weight disorder or both height and weight disorders, and 176 of them (84.6%) had no growth

disorder. The age class of studied children was between 3 to 3.5 years. 76.9% of participating children used to have breakfast and the rest of them did not.

More details are given in Table 3-1. In terms of appetite, most of parents (49.5%) think that their children are anorexic. In the most of studied children (46.6%) height range was between 100 to 110 cm and weight range was between 15 to 20 kg, more details are given in Table 3-1. In terms of height growth percentile, Most of children (25%), weight percentile was between 25 and 50, In other words, And in terms of weight growth percentile, most of children (21.6%) were placed in percentile between 50 and 75. Most of the children participating in the study (51%) get off to sleep 12 to 2 am and most of them (52.9%) used to have a lunchtime siestas, which mostly (18.8%) was between 60 to 90 minutes. Finally 0.5% of the children participating in the study had only height growth disorder, 5.8% of the children had only weight growth disorder, 9.1% of the children had both height and weight growth disorders, and 84.6% of the children didn't have any weight or height growth disorders. More details are given in Table 1.

Study results showed that education level of majority of participated mothers (53.4%) and fathers (54.8%) was high school. The more details are presented in (**Figure.2**).

In terms of monthly income, most families (58.7%) earn between 1 to 3 million Tomans, and most of the mothers participating in the study (83.2%) were housewives. (Table 2).

Based on Kendall's tau test results there is a significant relationship between height growth of children aged 3 to 6 years old and father education level (p=0.634), mother education level (p=0.170), mother job (p=0.587) ,and family monthly income (p=0.163). But there was no significant relationship between weight gain of children aged 3 to 6 years old with father education level (p=0.457) and mother job (p=0.843). however based on Kendall's tau test results there was a significant relationship between mother education level and weight gain of children 3 to 6 years old (p=0.013). Based on obtained results when mother education level is higher children weight gain is more appropriate. Moreover Kendall's tau test results showed that there is a significant relationship between family monthly income and weight gain of children aged 3 to 6 years old (p=0.048). When family income level is higher child weight gain is more appropriate. (Table 3).

Table 1: Frequency and percentages of data on Stature and Weight percentile and demographic information in 3–6 year-old children
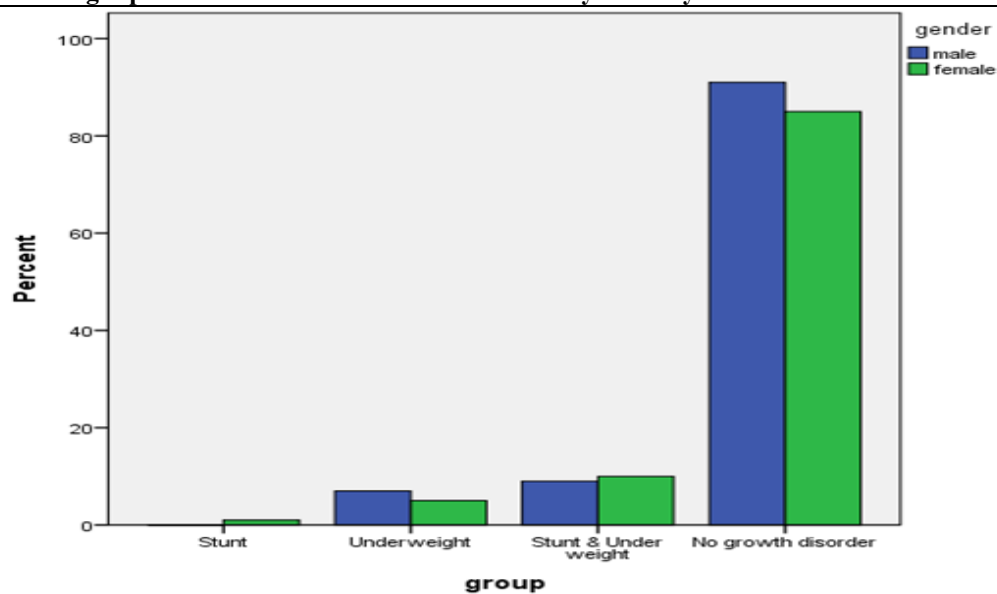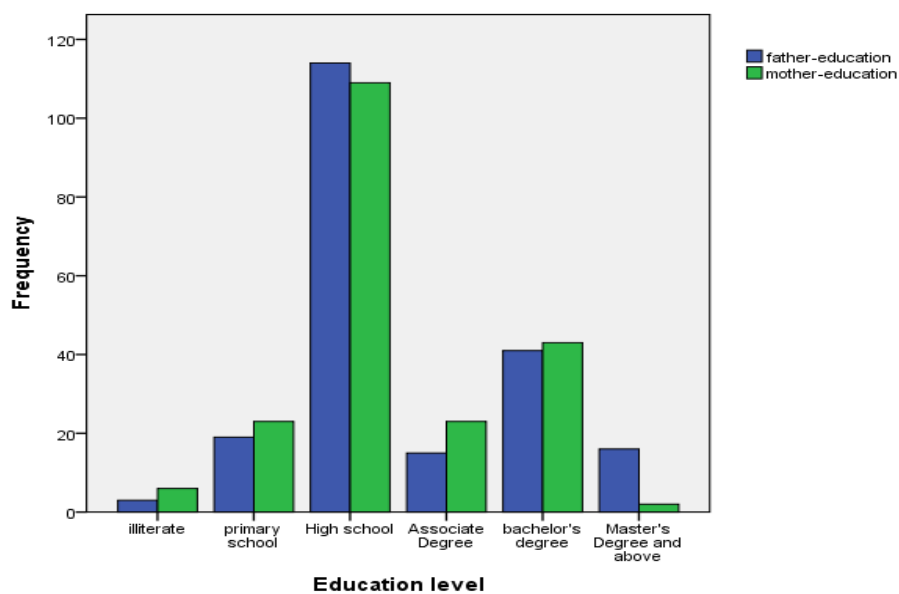
	Variable type	Frequency	Percent
Length percentile	**<5**	**21**	10.1
	5-10	**18**	8.7
	10-25	**36**	17.3
	25-50	**52**	25
	50-75	**70**	33.6
	75-95	**11**	5.2
Weight percentile	**<5**	**31**	14.9
	5-10	**21**	10.1
	10-25	**35**	16.8
	25-50	**42**	20.2
	50-75	**45**	21.6
	75->95	**34**	16.3
Weight	**10-15 kg**	**81**	38.9
	15-20 kg	**111**	53.5
	20->25 kg	**16**	7.6
Length	**<90 cm**	**11**	5.3
	90-100 cm	**78**	37.5
	100-120 cm	**96**	46.2
	>120 cm	**23**	11.1
Age	**Between 3-3/5 year**	**45**	21.6
	Between 3/5-4 year	**41**	19.7
	Between 4-4/5 year	**40**	19.2
	Between 4/5-5 year	**28**	13.5
	Between 5-5/5 year	**29**	13.9
	Between 5/5-6 year	**25**	12
Gender	**Male**	**107**	51.4
	Female	**101**	48.6
Group	**Underweight & Stunt**	**13**	6
	Stunt & Under weight	**19**	9.1
	No growth disorder	**176**	84.6

Table 2: Frequency and percentages of parent socioeconomic status information

	Variable type	Frequency	Percent
Father education	primary school & illiterate	22	10.5
	High school	114	54.8
	Associate Degree	15	7.2
	bachelor's degree	41	19.7
	Master's Degree and above	16	7.7
Mother education	primary school& Illiterate	29	13.9
	High school	111	53.4
	Associate Degree	23	11.1
	bachelor's degree& Master's Degree and above	45	21.63
Family monthly income	<1 million	74	35.6
	1-3 million	122	58.7
	3-5 million&> 5milion	12	5.7
Mother's job	Male housewife	173	83.2
	employed	35	16.8

Table-3. Relationship between parent socioeconomic status and height-for-age/weight-for age percentile of preschool children

Variable type	Variable type	P-Value
Length percentile	**Father education**	0.634
	Mother education	0.170
Weight percentile	**Father education**	0.457
	Mother education	0.013
Length percentile	**Mother s job**	0.587
Weight percentile	**Mother s job**	0.843
Length percentile	**Family monthly income**	0.163
Weight percentile	**Family monthly income**	0.048

Fig.1: Percentages of growth status in 3–6 year-old children

Fig.2: Frequency of parent's education level

DISCUSSION:

The results of this study showed that 10.1% of children were stunted (Stature percentile <5) and 14.9% of them were underweight (weight percentile <5). While results of Payandeh et al. (2013) showed that 7.5% of children were underweight and 12.5% of them were stunted (21). The reason of this difference may be the difference in weather conditions in the Northeast and Southwest or even racial difference. Another reason may be due to difference in sample sizes. Since in that study 70,339 children aged 0 to 5 years old were investigated.

Results of this study showed that there is a significant relationship between family monthly income and weight gain of children aged 3 to 6 years old (p=0.048), so that when family monthly income is higher children weight gain would be more appropriate. Obtained results is parallel with Kabiri's et al. studies (2003) that shows family economic status (father employment) effects on children weight gain, and also there is a significant relationship between child weight variable and child nutrition consisting from lamb, fish, and chicken meat (p=0.000) (22). So we can say that appropriate nutrition that is directly affected by family economic status, is one of the most important factors that effects on growth process of children.

Concerning relationship between children weight gain and height growth with parent's demographic variables including parent's education and mother employment, there was a significant relationship only between mother education level and weight gain, and there was no significant relationship in other cases. Study results of Kabiri et al. showed that by increasing mother education level underweight would decrease in children [22].

As well as results study of Amegah (2009) showed that mother education level has a close relationship with children nutrition status and weight gain, so that children with uneducated mothers compared to children with educated mothers are more at risk of underweight [17].

Also results of Saeidi and et al study (2013) with title in " Assessment the Relationship between Parents' Literacy Level with Children Growth in Mashhad: An Analytic Descriptive Study" showed that a significant relationship between literacy level of parents with child growth status, breast feeding rate, junk food consumption, referring to health care center for growth monitoring, the age of initiating supplementary nutrition, the use of oil and butter in baby food and rate of attending in educational classes. So that higher literacy level of parents was associated with using more formula,

less junk food, oil and butter in baby's food and more referring times to health care center for monitoring child growth, desirable growth, and also initiating supplementary food more at the assigned time (P<0.05) (23). In additional results of Patrick and et al study (2016) with title in " Socioeconomic Gradient in Childhood Obesity and Hypertension: A Multilevel Population-Based Study in a Chinese Community " showed that Totally 14842 children (age 6–19 years) included in the analysis, in which 16.6% of them were overweight or obese, Children whose mother only completed secondary school or below had higher risk of childhood obesity and hypertension (24).

So considering present and mentioned studies we can say that increasing mother education level would have an important impact on health, nutrition and growth improvement. Considering that in most of families mostly mothers are responsible for children nutrition and growth monitoring, and considering that increasing mother education level could provide higher knowledge and skill for mothers for selection of better methods and necessary follow up about children nutrition and growth, these obtained results are completely conceivable. Of course there is some discrepancies in this area yet. For example result of this study and result studies of Kabiri (22) and Saeidi (23) showed no significant relationship between mother education level and child height growth. So it seems that more studies with higher sample volume are needed for more investigation of this issue dimensions.

Limitations of the study:
Most important limitation of this study was low number of participated children with growth disorder.

CONCLUSION:
Socioeconomic status influences on children growth, and based on this study women with higher education would be more successful in upbringing children with appropriate weight gain, as well as children would have more appropriate weight gain by increasing family income level and its direct impact on other aspects like nutrition status. but considering result of this study, it seems that doing a similar study with a larger sample size that include a greater number of children with growth disorder is essential for better evaluation of relationship between socioeconomic status and children growth especially height growth.

CONFLICT OF INTEREST :
The authors had not any financial or personal relationships with other people or organizations during the study. So there was no conflict of interests in this article.

Authors Contribution:
Conception and design, drafting of the article, final approval of the article and obtaining of funding: MA
Analysis and interpretation of data and statistical expertise: SM
Critical reversion of the article for important intellectual content: MA
Collection and assembly of data: SM
Drafting of the article and obtaining of funding: SM

REFERENCES:
1.Elkholy TA. Nutrient Intakes Affecting the Nutritional Status of preschool Children by Nationality Compared with RDA. Journal of American Science. 2012;8(2).
2.De Onis M, Blössner M. The World Health Organization global database on child growth and malnutrition: methodology and applications. International Journal of Epidemiology. 2003;32(4):518-26.
3.Moradnia S, Adineh M, Vazirie Esferanjani Sh, Baraz Sh. Survey on the Relationship between Sleep Habits and Children`s Growth in Ahvaz City 2015. Int J Pediatr. 2016; 4(6): 1943-51.
4.Hoddinott J, Behrman JR, Maluccio JA, Melgar P, Quisumbing AR, Ramirez-Zea M, et al. Adult consequences of growth failure in early childhood. The American journal of clinical nutrition. 2013:ajcn. 064584.
5.Prendergast AJ, Humphrey JH. The stunting syndrome in developing countries. Paediatrics and international child health. 2014;34(4):250-65.
6.Keshvari-Delavar M, Mozaffari-Khosravi H, Nadjarzadeh A, Farhadian Z, Khazaei S, Rezaeian Sh. Comparison of Growth Parameters, Apgar Scores, the Blood Zinc, Magnesium, Calcium and Phosphorus between Gestational Diabetic and Non-diabetic Pregnant Women. Int J Pediatr. 2016; 4(5): 1767-75.
7. Mahyar A, Ayazi P, Fallahi M, Haji Seiid Javadi T, Farkhondehmehr B, Javadi A , Kalantari Z. Prevalence of Underweight, Stunting and Wasting Among Children in Qazvin, Iran. *Iranian Journal of Pediatric Society*. 2010; 2(1): 37-43.
8.Jalilolghadr S, Hashemi S, Javadi M, Esmailzadehha N, Jahanihashemi H, Afaghi A. Sleep habits of Iranian pre-school children in an urban area: Late sleeping and sleep debt in children. Sleep and Biological Rhythms. 2012;10(2):154-6.
9.Diethelm K, Remer T, Jilani H, Kunz C, Buyken AE. Associations between the macronutrient composition of the evening meal and average daily sleep duration in early childhood. Clinical Nutrition. 2011;30(5):640-6.
10.Vakili R, Yazdan Bakhsh M, Vahedian M, Mahmoudi M, Saeidi M, Vakili S. The Effect of Zinc Supplementation on Linear Growth and Growth Factors in Primary Schoolchildren in the Suburbs Mashhad, Iran. International Journal of Pediatrics. 2015;3(2.1):1-7.
11.Moeeni V, Walls T, Day S. Assesment of Malnutrition in Hospitalized in Iran and Newzeland. International Journal of Pediatrics. 2014;2(2.1):27-.
12.Khodaee GH, Emami Moghadam Z, Khademi G, Saeidi M. Healthy Diet in Children: Facts and Keys. International Journal of Pediatrics. 2015;3(6.2):1183-94.
13.Sharafi S, Razi M, Pouresmail Z. Prevention of Malnutrition in Children, Slimming Yesterday, Obesity Today. International Journal of Pediatrics. 2014;2(2.1):41-46.
14.Oliveira LB, Sheiham A, Bo¨necker M. Exploring the association of dental caries with social factors and nutritional status in Brazilian preschool children. Eur J Oral Sci. 2008; 116: 37–43.
15. Himes J, et al. Parent-Specific Adjustments for Evaluation of Recumbent Length and Stature of Children. Pediatrics, 1985. 75(2): 304-313.
16.Delemarre-van de waal H. Environmental Factors Influencing Growth and Pubertal Development. Environ Health Perspect. 1993.101(2):39-44
17.Amegah T, Adeladza R. The Influence of Socio-economic and Nutritional Characteristics on Child Growth in Kwale District of Kenya. African Journal of Food, Agriculture, Nutrition and Development. 2009.9(7): 1570-1590.
18. Gur E, et al. Is undernutrition a problem among Turkish School Children? Wich factors have an Influence on It?. J Trop Pediatr 2006;52(6):421-426.
19.The proposed method by WHO for measuring Stature and weight of children .Available from: URL; http: www.who.int/gho/mdg/poverty-hunger/underweight-text/en./
20.Child growth chart calculator of Center for disease control and prevention (CDC). Available at: http:www.who.int/nutgrowthdb/publications/stunting1990_2020/en./
21.Payandeh A, Saki A, Safarian M, Tabesh H, Siadat Z. Prevalence of malnutrition among preschool children in northeast of Iran, a result of a population based study. Global journal of health science. 2013;5(2):208.

22.Kabiri M, Parsinia M, Godarzi M, Babai GH. The relationship between physical growth in children 0 to 2 years old who were referred to health centers in the Karaj city with economic, social, cultural and their parents using logistic regression models. Journal of Iranian Pediatrics diseases. 2003;13(1):47-52.

23.Saeidi M, Vakili R, Kiani MA, Hoseini BL, Khakshour A. Assessment the Relationship between Parents' Literacy Level with Children Growth in Mashhad: An Analytic Descriptive Study. International Journal of Pediatrics. 2013; 1(2):39-43.

24.Patrick I, Frederick Ka Wing Ho, Hung-Kwan So, Dorothy Fung-ying Chan Matthew Ho, Winnie Tso, E. Anthony S. Socioeconomic Gradient in Childhood Obesity and Hypertension: A Multilevel Population-Based Study in a Chinese Community. PLoS ONE,2016; 11(6):1-12.