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Nutritional Status in a Sample of the Afghan Immigrant Children Within Iran

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Abstract: Anthropometric studies in Afghan immigrants in Iran have not been yet performed; therefore the aim of the present study is to identify Body Mass Index (BMI) in a sample of Afghan immigrant children in Iran during the year 2005. In this cross-sectional study 606 Afghan children aged between 6-14 years have been randomly selected within Shahriar County of Tehran Province of Iran and their weight and height have been measured. Then, using BMI formula $BMI = Weight (kg)/Height (m^2)$ their BMI was calculated and based on CDC (Centers for Disease and Prevention Control) indices, children were categorized as: under weight, normal and obese. Results of this study showed that 97 cases (16%) had low weight whereas, 429 cases (81.2%) had normal weight and 17 cases (2.8%) had over weight. More percentage of girls had lower weight than the boys (15.2 versus 16.9%), Afghan children who were born in Iran had also lower weight (17.3%) than those who were born in Afghanistan (15.2%) and third and upper birth order children had lower weight compared to first and second birth order (17 versus 15.3%). However, none of these differences were statistically significant. The researchers suggest that due to high incidence of malnutrition in Afghan immigrant children in Iran interventional and educational programs are needed in order to improve their level of health and nutritional status.

Key words: Body mass index, Afghan immigrant children

INTRODUCTION

Access to healthy food and safe water, education, health, welfare, shelter and fun is a global right for all the children throughout the world. Despite of these rights, in the year 2005 UNICEF has reported that 640 million children have no sufficient shelter, 400 million children have no access to safe water, 90 million children suffer from severe malnutrition and 14 million children never go to school (UNICEF, 2005). Focusing on malnutrition, it should be also noted that about half of the world children suffer from stunting (height for age criteria) and 10% to 15% of them from wasting (weight for height criteria) (Garrow *et al*., 2000). Furthermore, the effects of malnutrition on learning and behaviours such as the reduction of individual and community work capacities, reduction of natural defense and learning abilities, impairment of behaviour and regulation of body processes have also been reported (De Onis *et al*., 2000).

The growth assessment is the best method for determining health and nutritional status in children (Lucas, 2004). Using this method it would be possible to identify children with nutritional problems. Among the nutritional assessment methods the anthropometric technique is the cheapest and quickest method that

shows nutritional condition in both long and short terms (Shils *et al*., 1999). Before 2000, age, weight, height and weight for height were the most important indices for the assessment of the children's growth. However, today Body Mass Index (BMI) is the most common index which is applied for the assessment of the children's growth (Karlberg *et al*., 2003).

There are different studies (national or local) taking place in Iran in order to assess Iranian children's growth using either old or new criteria. For instance the last national survey in Iran in November 1998 showed that in rural areas 12.8% of children suffered from mild to severe nutritional problems, i.e., 13.7% of them were underweight and 4.8% of them suffered from wasting (Sheikholeslam *et al*., 2004). Similarly, Kelishadi *et al*. (2008) showed that 13.9% of Iranian school-students were underweight. In another study it has also been shown that the averages BMI for girls in groups of 12, 14, 15, 16 and 18 years old were more than NCHS standard (p<0.05) (Mahyar and Asefzadeh, 2005).

Due to two decades war in Afghanistan, Afghani people who migrated to the neighboring countries including Iran are suffering from both the consequences of war and migration. War and migration could especially affect children by increasing malnutrition, morbidities and

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mortalities. Since, there has been no previous study which assess the nutritional status of Afghan migrated children to Iran, the present study has been conducted to assess BMI of Afghani children and its association with their age, sex, place and order of birth.

MATERIALS AND METHODS

This cross sectional study was performed during September to October 2005 on boy and girl Afghani students aged 6-14 years who studied in Afghan informal self-administrated primary schools within Shahriar County of Tehran Province of Iran (Fig. 1). It should be noted that this county is near to Tehran the capital of Iran and for its location and its relatively cheaper price of living including accommodation it contains a large number of Afghan immigrants.

The sample size needed for this study was calculated using the formula:

$$n = z2pq/d2$$

where, n is the desired sample size, Z equals to 1.96 (at 95% significance level), p is the prevalence of underweight and q is 1-p.

Since, there was not any previous information regarding underweight prevalence in the studied population, therefore, the value of both p and q assigned as 0.5. Furthermore, d is the degree of accuracy that was assigned as 0.04. Based on this formula the minimum size of sample was 601 individuals. Therefore, 606 random samples of the students have been selected.

In the next step a questionnaire which includes of demographic variables was filled up for each student. Student's weight and height were also measured with the minimum clothes and no shoes by an accurately calibrated Seca digital scale with an accepted error of 0.1 kg and by stadio-meter with an accepted error of 0.1 cm, respectively. Data were analyzed by SPSS Version 12 software using descriptive technique (mean and SD) plus analytic technique (t test and chi square test).

RESULTS

The demographic characteristics of Afghani children are shown in Table 1. Furthermore, the mean and SD of children age were 9.97±2.61 years and the minimum age was 6 while the maximum was 14 years. The mean and SD of age for boys were 10.11±2.28 years and for girls were 9.91±2.42 years the difference however, was not statistically significant (p-value 0.48). The mean and SD of BMI for boys were 15.93±2 kg m^{-2} and for girls were 16±2.5 kg m^{-2} the difference nonetheless, was not statistically significant (p-value 0.35). Results of this study also showed that 97 cases (16%) had low weight whereas, 429 cases (81.2%) had normal weight and 17 cases (2.8%) had over-weight.

The distribution of Afghani children based on their BMI and sex showed that 16.9% of girls had lower weight
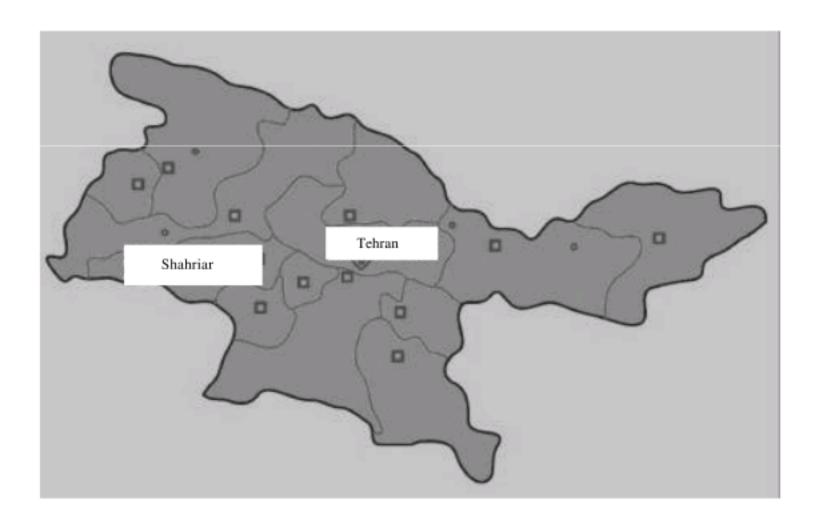

Fig. 1: The location of Shahriar County in relation to Tehran County

Table 1: Demographic based distribution of Afghani children

Variables	No.	%
School level		
First	219	36.1
Second	110	18.2
Third	120	19.8
Forth	69	11.4
Fifth	88	14.5
Sex		
Boy	322	53.1
Girl	284	46.9
Place of birth		
Iran	223	36.8
Afghanistan	383	63.2
Age (year)*		
6	21	3.5
7	82	13.5
8	85	14.0
9	88	14.5
10	83	13.7
11	68	11.2
12	79	13.0
13	56	9.2
14	44	7.3
Birth order		
1st and more	247	40.7
3rd and more	359	59.3

*It should be noted that age categories is stratified in ranges i.e., 6 year means from the beginning of 6 year up to 6 year and 11 months and 29 days

Table 2: Distribution of Afghani children based on their BMI and sex

	BMI							
	Underweight		Normal		Obese		Total	
Sex	No.	%	No.	%	No.	%	No.	%
Boy	49	15.2	262	81.4	11	3.4	322	100
Girl	48	14.9	230	81.0	6	2.1	284	100
Total	97	16.0	492	81.2	17	2.8	606	100

$\chi^2 = 1.184$, df = 2, p-value = 0.55

Table 3: Distribution of Afghani children based on their BMI and place of birth

	BMI							
	Underweight		Normal		Obese		Total	
Place	No.	%	No.	%	No.	%	No.	%
Iran	39	17.5	178	79.8	6	2.7	223	100
Afghanistan	58	15.1	314	82.2	11	2.9	383	100
Total	97	16.0	492	81.2	17	2.8	606	100

$\chi^2 = 1.184$, df = 2, p-value = 0.74

Table 4: Distribution of Afghani children based on their BMI and birth order

	BMI							
	Underweight		Normal		Obese		Total	
Birth order	No.	%	No.	%	No.	%	No.	%
First and second	42	17.0	195	78.9	10	4.0	247	100
Third and more	55	15.3	297	82.7	7	1.9	359	100
Total	97	16.0	492	81.2	17	2.8	606	100

$\chi^2 = 2.814$, df = 2, p-value = 0.24

in comparison to 15.2% of boys, however the difference was not statistically significant (p-value 0.55) (Table 2).

The distribution of Afghani children based on their BMI and place of birth also showed that 17.3% of Afghani children who were born in Iran had lower weight in comparison to 15.2% of those were born in Afghanistan, nevertheless the difference was not statistically significant (p-value 0.74) (Table 3).

Finally, the distribution of Afghani children based on their BMI and birth order showed that 15.3% of third and upper birth order children had lower weight in comparison to 17% of first and second birth order, although the difference was not statistically significant (p-value 0.24) (Table 4).

DISCUSSION

War and migration either national and/or international may affect health and nutritional status of children and decrease their access to education and health care (Shahbazpour, 2003; Janghorbani and Parvin, 1998). That is why present results showed that 16% of the studied Afghani children had underweight, which is higher than those of other studies which took place among the Iranian and other nationalities' children (Sheikholeslam et al., 2004; Kelishadi et al., 2008; Kunal, 2008; Paul Ge et al., 2001).

The results also showed that the percentage of underweight in girls was more than boys (16.9 versus 15.2%). Although, this difference was not statistically significant one should bear in mind this fact that boys are more important in some developing countries such as Afghanistan while the results of one study in Iranian children showed that boys were more underweight than the girls (8.1% of boys versus 5.7% of girls) although mean BMI of the studied subjects was 18.5 ± 3.8 kg m^{-2}, with no gender-specific differences (Kelishadi et al., 2007).

Another important finding of this research is that Iran-born Afghan children had higher underweight than Afghanistan-born children (17.5 versus 15.1%). Although, this difference was not statistically significant one should again bear in mind this fact that the born of an infant in a non-native country could deteriorate his/her infancy and childhood growth.

Moreover, present findings showed that nutritional status in third and more birth order children is better than first and second birth order ones (15.3 versus 17%). Although, this difference was not statistically significant our experiences highlighted that in Afghan community within Iran older children consider as work force so they

aid family's economical conditions. This means better access to food for all family members especially younger children. Finally, another important finding of this research is that 2.8% of Afghan immigrant children also suffer from obesity. Commensalism between obesity and underweight is also reported in African immigrants to the USA and Australia (Renzaho *et al.*, 2006). Comparison of nutritional status of the studied children based on their sex and BMI also showed that overweight in girls is less than boys (2.1 versus 3.4%). However, it has been shown that 16.1% of Iranian boys and 19.3% of Iranian girls suffer from over weight (Mosavi Jazayeri, 2005). Comparison of present results with the results of this study revealed that Afghani girls had less over weight compared to Iranian girls.

CONCLUSION

Based on the results of this research it can be concluded that war, immigration and cultural preferences could affect nutritional status of the Afghani children. Therefore, based on this fact that the investment for children is an investment for the future generation, the researchers suggest that for Afghan immigrant children interventional and educational programs are needed in order to improve their level of health and nutritional conditions.

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