

بحوث باللغات الأجنبية

- [20]. Karayiannis, D., Yannakoulia, M., Terzidou, M., Sidossis, L. S., & Kokkevi, A. (2003). Prevalence of overweight and obesity in Greek school-aged children and adolescents. *European journal of clinical nutrition*, 57(9), 1189-1192.
- [21]. Rolland-Cachera, M. F., & Thibault, H. (2002). Définition et évolution de l'obésité infantile. *Journal de Pédiatrie et de Puériculture*, 15(8), 448-453.
- [22]. Padez, C., Fernandes, T., Mourão, I., Moreira, P., & Rosado, V. (2004). Prevalence of overweight and obesity in 7–9-year-old Portuguese children: Trends in body mass index from 1970–2002. *American Journal of Human Biology*, 16(6), 670-678.

- [8]. Chiolero, A., Cachat, F., Burnier, M., Paccaud, F., & Bovet, P. (2007). Prevalence of hypertension in schoolchildren based on repeated measurements and association with overweight. *Journal of hypertension*, 25(11), 2209-2217.
- [9]. Whitaker, R. C., Wright, J. A., Pepe, M. S., Seidel, K. D., & Dietz, W. H. (1997). Predicting obesity in young adulthood from childhood and parental obesity. *New England Journal of Medicine*, 337(13), 869-873.
- [10]. Engeland, A., Bjørge, T., Tverdal, A., & Sjøgaard, A. J. (2004). Obesity in adolescence, adulthood, and the risk of adult mortality. *Epidemiology*, 15(1), 79-85.
- [11]. Rocchini, A. P. (2002). Childhood obesity and a diabetes epidemic. *New England Journal of Medicine*, 346(11), 854-855.
- [12]. Pinhas-Hamiel, O., & Zeitler, P. (2007). Acute and chronic complications of type 2 diabetes mellitus in children and adolescents. *The Lancet*, 369(9575), 1823-1831.
- [13]. Baker, J. L., Olsen, L. W., & Sørensen, T. I. (2007). Childhood body-mass index and the risk of coronary heart disease in adulthood. *New England journal of medicine*, 357(23), 2329-2337.
- [14]. Institut national de la sante´ et de la recherche médicale.. Obésité´ : dépistage et prévention chez l'enfant. France : Institut national de la sante´ et de la recherche médicale. Expertise collective ; 2000: 329.
- [15]. Aspray, T. J., Mugusi, F., Rashid, S., Whiting, D., Edwards, R., Alberti, K. G., ... & Essential Non-Communicable Disease Health Intervention Project. (2000). Rural and urban differences in diabetes prevalence in Tanzania: the role of obesity, physical inactivity and urban living. *Transactions of the Royal Society of Tropical Medicine and Hygiene*, 94(6), 637-644.
- [16]. Hajian-Tilaki, K. O., Sajjadi, P., & Razavi, A. (2011). Prevalence of overweight and obesity and associated risk factors in urban primary-school children in Babol, Islamic Republic of Iran. *Eastern Mediterranean Health Journal*, 17(2), 109.
- [17]. Al-Isa, A. N., Campbell, J., & Desapriya, E. (2010). Factors associated with overweight and obesity among Kuwaiti elementary male school children aged 6–10 years. *International journal of pediatrics*, 2010.
- [18]. Chinn, S., & Rona, R. J. (2001). Prevalence and trends in overweight and obesity in three cross sectional studies of British children, 1974-94. *Bmj*, 322(7277), 24-26.
- [19]. Tremblay, M. S., Katzmarzyk, P. T., & Willms, J. D. (2002). Temporal trends in overweight and obesity in Canada, 1981-1996. *International journal of obesity and related metabolic disorders: journal of the International Association for the Study of Obesity*, 26(4), 538-543.

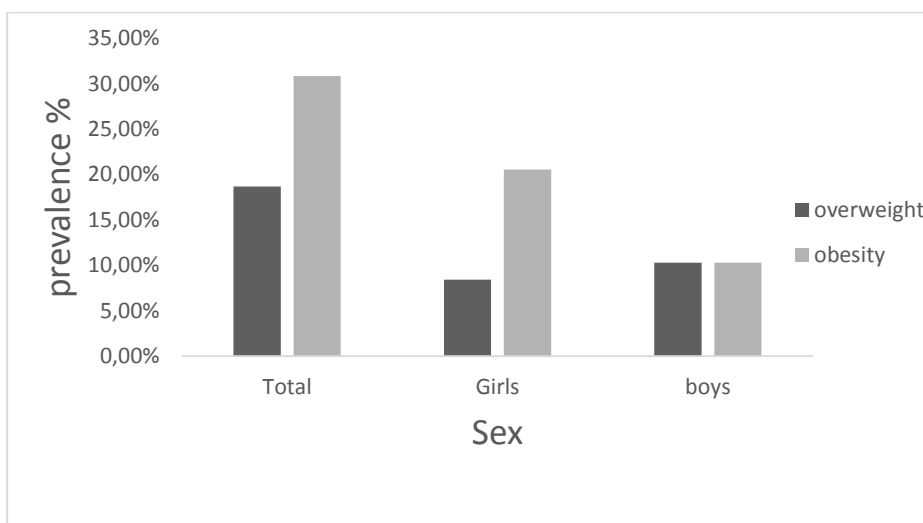


Figure 3: Prevalence of overweight and obesity by sex based on international standards (Cole *et al*, 2000).

Référence

[1]. Souames, M., Brun, P., & Losfeld, P. (2005). Surpoids et régime alimentaire chez l'adolescent : étude dans les collèges du département des Hauts-de-Seine. *Archives de pédiatrie*, 12(10), 1540-1543.

[2]. Sebbani, M., Elbouchti, I., Adarmouch, L., & Amine, M. (2013). Prévalence de l'obésité et du surpoids chez les écoliers de primaire à Marrakech, Maroc. *Revue d'Épidémiologie et de Santé Publique*, 61(6), 545-549.

[3]. Guo SS, Wu W, Chumlea WC, Roche AF. Predicting overweight and obesity in adulthood from body mass index values in childhood and adolescence. *Am J Clin Nutr* 2002 ; 76(3) :653-8.

[4]. Taleb, S., Oulamara, H., & Agli, A. N. (2010). Prévalence du surpoids et de l'obésité chez les enfants scolarisés à Tébessa (Algérie) entre 1998 et 2005. *Eastern Mediterranean Health Journal*, 16(7), 746.

[5]. Cole, T. J., Bellizzi, M. C., Flegal, K. M., & Dietz, W. H. (2000). Establishing a standard definition for child overweight and obesity worldwide: international survey. *Bmj*, 320(7244), 1240.

[6]. Lobstein, T., Baur, L., & Uauy, R. (2004). Obesity in children and young people: a crisis in public health. *Obesity reviews*, 5(s1), 4-85.

[7]. Bovet, P., Auguste, R., & Burdette, H. (2007). Strong inverse association between physical fitness and overweight in adolescents : a large school-based survey. *International Journal of Behavioral Nutrition and Physical Activity*, 4(1), 1.

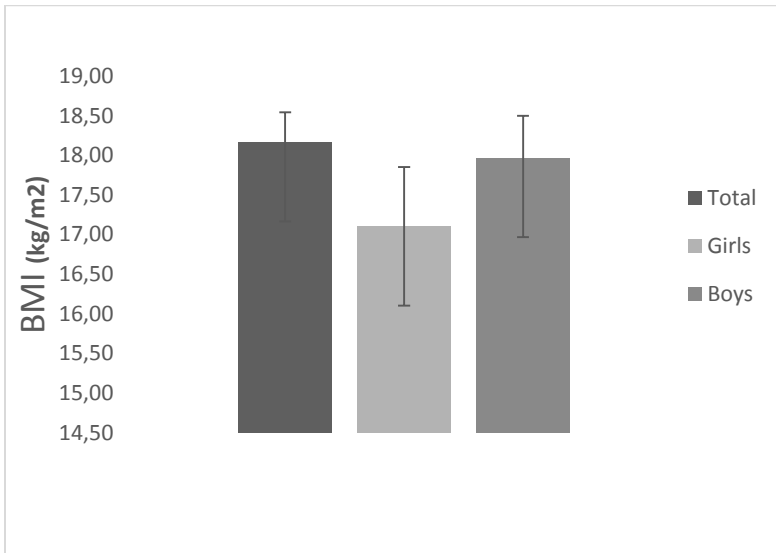


Figure 1: The values of body mass indices

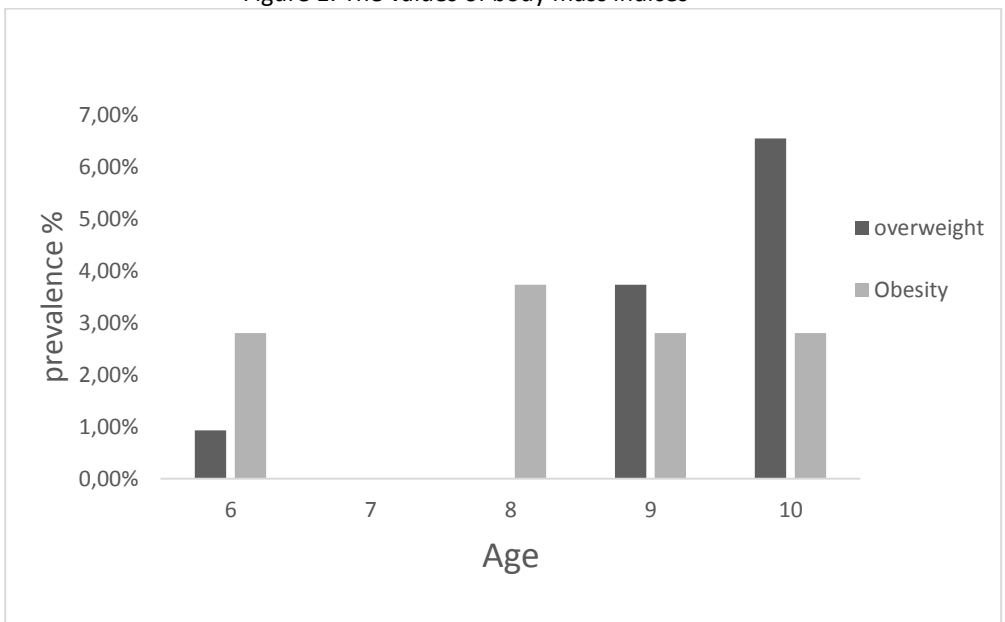


Figure 2: Prevalence of overweight and obesity by ages based on international standards (Cole *et al*, 2000).

the Middle East, the proportions are higher and reach in Kuwait 20.2% for overweight and 16.8% obesity among boys aged from 6 to 10 years [17]. The results are even more alarming in the West. England, in 1994, the prevalence of overweight among 7-8 years was 12.5 % of girls and 9 % of boys [18]. In Canada in 1996, for children aged 7 to 13 years, the prevalence of overweight was 32.4 % for boys and 26.4% girls [19]. In Greece, during the period 1997-1998, the prevalence of overweight in 11.5 years was 18.6 for boys and 11.8 for girls [20]. Frequency of overweight including obesity in France in 2000 for 7 years was 19.7 % for boys and 18.6% girls [21]. In our study, the prevalence of overweight and obesity by ages based on international standards [5], Shows that at the age of six the prevalence of obesity is very significantly ($p < 0.01$) higher compared to the prevalence of overweight in this same age. While, no percentage of obesity or overweight has been detected in the groups of children aged 7 years old. At 8 years old obesity peaked with 3.37% and the overweight remains non-existent at this age. At nine years old, prevalence of obesity declined with a value of 2.81 %, while the overweight reappears with a value of 3.38%. At 10 years old, the prevalence of overweight peaked significantly ($p < 0.001$) with a value of 6.54% compared to the prevalence of obesity which remains stable with a percentage of 2.81%. However, a Portuguese study conducted on schoolchildren aged 7 to 9 years shows that 20.3 % of children overweight and 11.3% obese children. These results indicate a prevalence of overweight / obesity of 31.5%. The girls showed higher percentages of overweight than boys, except for 7.5 years old. The girls also showed a higher percentage of obesity than boys, except to 9 years old [22].

Table 1 Anthropometric measurements by sex and age [mean (SD)]

Age (years)	Girls		Boys	
	Weight (kg)	Sizes (m)	Weight (kg)	Sizes (m)
6	22,53 (4,88)	1,15 (0,16)	27,5 (7,78) *	1,31 (0,26)
7	21,44 (1,66)	1,23 (0,12)	21,33 (2,31)	1,18 (0,08)
8	33,74 (11,85) *	2,56 (0,54) **	29,19 (7,35)	1,35 (0,10)
9	26,8 (4,61)	2,36 (3,56) **	31,95 (6,47) *	1,32 (0,12)
10	29,12 (3,18)	1,33 (0,10)	37,55 (3,85) **	1,39 (0,07)

The comparison of means between groups was performed by the “t” test of Student after analysis of variance (ANOVA): * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

(20.56% against 10.28%). In addition, boys are more overweight than girls (10.28% against 8.41%).

Discussion:

The fight against obesity is a major public health challenge of the coming decades. The situation is particularly worrying with a significant recent increase in the prevalence of overweight and obesity, especially noticeable among young people and among priority education zones. The consequences of overweight in children and adolescents are many and can be severe [6, 7]. Hypertension was observed in 1.4% of normal weight children, 3.6 % of children are overweight and 24% obese children. Biological effects also add social and psychological problems: their peers often stigmatize overweight children [8]. The biggest problem of pediatric overweight and obesity is its perpetuation in adulthood [9, 10]. The overweight epidemic is causing the global epidemic of type 2 diabetes in adults. Until recently, type 2 diabetes occurred only rarely before the fifties, but it has now become a pathology encountered by pediatricians, especially in adolescents [11]. In addition, the progression of complications of type 2 diabetes seems to be faster when diabetes early installs [12]. A recent study showed that the relationship between childhood BMI and coronary heart disease in adulthood is not limited to the categories of overweight and obesity, but this risk increases linearly with BMI [13]. Therefore, the international community is interested more and more in the study of overweight and obesity, due to their rapid growth and their multiple consequences in terms of morbidity and mortality. In children, the study of the prevalence of these phenomena has been the subject of numerous publications around the world. The results vary considerably across countries. In our studies, the results of body mass index show that boys have a superior BMI than girls. While the study of the prevalence of overweight and obesity in relation to the sex of children and based on international criteria [5], has shown that girls are more obese than boys. While the boys have a high overweight prevalence than girls. Therefore, the influence of gender on height and weight status was the subject of several studies. The difference between boys and girls can be explained by the peculiarities of the growth related to gender and the different changes in the distribution of body fat according to the sex [13]. Our results are consistent with those undertaken by Zagre et al., (2001) [14], which confirms the predominance of female obesity compared to the boy. Another investigation between urban and rural populations indicates that overweight and obesity vary by sex, and indicate that for obesity and overweight, the difference was 21.5%, 6.2% for men, and 17.4 %, 12.7 % for women [15]. In Arab countries, the results are similar to ours. An Iranian study, conducted among schoolchildren living in urban environments, found the numbers of overweight and obesity' respectively 5.8% and 12.3% [16]. In

girls and 4.5% of boys were in 6 -11 years old [3]. In Tunisia, Zambia and Togo, the prevalence of obesity among preschool children (0-59 months) was between 1 and 4% [4]. The aim of our study was to determine the prevalence of overweight and obesity in schoolchildren because in Algeria, very few studies have been conducted on obesity and we have no current information on the extent problem.

Materials and methods

Anthropometric measurements for height and weight were recorded on 106 school children (41 boys and 65 girls) aged 6 to 10. The data were collected between in 2012 and 2013. Weight was measured using scales and height was measured with a measuring rod. Body mass index ($BMI = \text{weight [kg]} / \text{height}^2 [\text{m}^2]$) was chosen to estimate the prevalence of overweight and obesity according to international definitions [5]. Cole and his colleagues have established baselines, from the values of BMI, which take account of age and sex of children. The mean \pm S.D. Values were calculated for each group to determine the significance of intergroup difference. Each parameter was analyzed separately using two-way ANOVA analysis of variance. To find the difference between the groups Student's 't' test was used. P values <0.05 were considered to be significant.

Results

The results in Table 1 indicate the anthropometric measurements of children in this study. Significant differences between girls and boys are detected in the measurements of average weight. The weight of the boys is higher than that of girls in the entire sample, from 6 to 10 years old. While girls have a low weight between 6 to 7 years old and that starts to increase from 8 to 10 years old, but is still lower than that of boys. The calculation of body mass index shows that BMI reaches (18, 16 kg / m^2) in the overall sample. Boys have an average value of (17, 97 kg / m^2) and girls (17, 10 kg / m^2) (Figure 1).

In addition, the interpretation of the results in Figure 2, based on international criteria described by Cole *et al* (2000) show the prevalence of overweight and obesity in relation to different ages studied. At six years old, obesity is significantly ($p < 0.01$) greater than the overweight (2.80 % compared to only 0.93 %). While, no percentage of obesity or overweight has been detected in the groups of children aged 7 years old. At 8 years old obesity peaked with 3.37% and the overweight remains non-existent at this age. At nine years old, prevalence of obesity declined with a value of 2.81 %, while the overweight reappears with a value of 3.38%. At 10 years old, the prevalence of overweight peaked with a value of 6.54% and obesity remains stable with a percentage of 2.81%.

Figure 3, shows the prevalence of overweight and obesity in relation to the sex of the children studied based on international criteria described by Cole *et al* (2000). The overall prevalence of obesity and overweight with both sexes in all children is 30.84 % for obesity and 18.69% for overweight. Girls are more obese than boys

الكلمات المفتاحية: مؤشر كتلة الجسم، تلاميذ، الأولاد، الفتيات، السمنة، زيادة الوزن.

Abstract

The aim of this study was to assess the prevalence of overweight and obesity in Algerian children age 6–10 years old, by analyzing the values of body mass index (BMI Kg/m²). The data were collected during the 2012-2013 school year in a random sample of schoolchildren in the province of Saïda. The results show that BMI reaches in the overall sample (18, 16 kg / m²). The boys have an average value of (17, 97 kg / m²) and girls (17, 10 kg / m²). At 6 years, the prevalence of obesity is very significantly high (P <0.01) than the overweight (2.80% against 0.93%). while at 10 years, the prevalence of overweight is highly significant (P <0.001) than the obesity (6.54% against 2.80%). Analysis of the prevalence in relation to sex shows that the overall prevalence of obesity and overweight with both sexes in all children is (30.84 %) for obesity and (18.69%) for overweight. Therefore, girls are more obese than boys (20.56% against 10.28%), and boys are more overweight than girls (10.28% against 8.41%).t

Keywords: Overweight, Obesity, BMI, Children, Boys, Girls.

Obesity is an increasingly important phenomenon. In addition to its psychosocial impact, several studies have demonstrated the relative impact of body weight on the risk of cardiovascular disease, diabetes and certain types of cancer. An obese child often remains in adulthood. Epidemiological studies have found higher mortality among adults 50 to 80 % associated with this type of early obesity. This excess of mortality in adulthood is especially cardiovascular, and affects more the men. The direct and indirect health costs associated with obesity are far from negligible; they represent about 10% of health costs in industrialized countries [1]. Given its rapid growth around the world, childhood obesity is nowadays a health phenomenon increasingly worrisome. It represents one of the consequences of the nutrition transition and sedentary lifestyle have emerged in many countries, particularly in urban areas [2]. These consequences on physical health in addition to psychological and social impacts associated with changing the picture of the body caused by childhood obesity [3]. In ten years, obesity has increased by 53 % in Japan, 60% in the US and 65 % in Britain. Child obesity is not limited to the industrialized countries, since already seeing a high percentage in some developing countries. In Thailand, the prevalence of obesity among students from six to twelve years rose from 12.2 % in 1991 to 15.6% in 1993. In Saudi Arabia, in a study in school, boys aged six to eighteen years showed a prevalence of obesity of 15.8% [1]. In Egypt, in 2002, a study showed that 3% of girls and 1.7% of boys were obese in 2-6 years old, 6.5% of

Prevalence of obesity and overweight among a sample of schoolchildren

Messaouda Benhamza¹, Malika Bendahmane-Salmi²

¹ Centre Universitaire AHMED Salhi, Naama, Algérie.

² University Hospital Complex (UHC) of Sidi-Bel-Abbes, Sidi-Bel-Abbes, Algeria

المخلص:

الهدف من هذه الدراسة هو تقييم مدى انتشار زيادة الوزن والسمنة عند الأطفال الجزائريين الذين تتراوح أعمارهم بين 6 حتى 10 سنة من خلال تحليل قيم مؤشر كتلة الجسم (كلغ / متر²). حيث تم جمع البيانات خلال العام الدراسي 2012-2013 عند عينة عشوائية من تلاميذ المتدرسين في ولاية سعيدة. وأظهرت النتائج أن مؤشر كتلة الجسم تصل في مجمل العينة الى (18، 16 كلغ / متر²). الأولاد لديهم متوسط مؤشر كتلة الجسم قيمته (17، 97 كلغ / متر²) اما الفتيات فلديهن متوسط قيمته (17، 10 كلغ / متر²). كما تم الكشف ان انتشار السمنة جد عالي بالنسبة لزيادة الوزن عند العينات التي اعمارها 6 سنوات (2،80% مقابل 0،93%). وفي العينات التي اعمارها 10 سنوات، انتشار زيادة الوزن مهم للغاية بالنسبة للسمنة (6،54% مقابل 2،80%). ويظهر التحليل فيما يتعلق بالجنس بأن معدل انتشار السمنة وزيادة الوزن لكلا الجنسين عند جميع الأطفال على التوالي هو: 30،84% و 18،69%. وبالتالي نستخلص ان الفتيات أكثر من الأولاد يعانون من السمنة المفرطة (20،56% مقابل 10،28%)، والأولاد يعانون أكثر من زيادة الوزن (10،28% مقابل 8،41%).