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Prevalence of Overweight and Obesity among Schooling Adolescents in the City of Mbuji-Mayi

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Abstract

Objective

To determine the prevalence of overweight and obesity among school-going adolescents in the town of Mbuji-Mayi.

Methods

This is a transversal, analytical and unicentric study carried out on consenting 5th and 6th year humanities students. We sampled 343 students including 201 boys and 142 girls aged 15 to 19. For each of the students, we measured weight, height and then calculated the body mass index (BMI).

Results

Out of a total of 343 students including 201 boys and 142 girls, the prevalence of overweight and obesity were 3.42 (12) and 2.28 (8) respectively. Of the 201 boys, 6 boys were overweight or 2.6% and 2 were obese or 0.9%. Of the 142

girls, 6 were overweight and 6 others were obese, i.e. 4.2% for each category. Regardless of gender, the average weight of these adolescents increased systematically with age. Unlike weight, the average height of adolescents did not increase with age. The average height of these adolescents was 160.5 (7.3) including 164.9 (8.0) for boys and 156.0 (6.6) for girls. The average BMI was 21.4 (9.6) including 21.0 (7.2) and 21.8 (10.9) for boys and girls respectively. It should be noted that the average BMI of girls was higher than that of boys.

Conclusion

Overweight and obesity are a very real medical problem among adolescents in the city of Mbuji-Mayi with a predominantly female tendency.

Keywords: Prevalence, Overweight, Obesity, BMI, Adolescent

Introduction

Overweight and obesity constitute a new health pandemic emerging on a global scale, due to their potential slowdown on health and their constantly increasing incidence and prevalence [1].

Global estimates of the prevalence of overweight and obesity among children and adolescents made in 2012 showed that approximately 150 to 160 million school-aged children (5 to 17 years) worldwide were overweight, of whom 350 to 40 million were obese [6]. Obesity in adolescence is a predictive factor for obesity in adulthood and is then accompanied by increased risk of morbidity in subjects who were overweight in adolescence, even in those who return to normal weight in adulthood [2].

According to the World Health Organization (WHO), being overweight was one of the top ten health risks in the world and one of the top five in developed countries [3]. Obesity is a well-known risk factor for various chronic health problems such as

cardiovascular diseases, hypertension, stroke, type II diabetes mellitus, osteoarthritis and certain cancers. These conditions not only lead to impaired quality of life given their prolonged characteristics, but also to premature death [4]. Obesity is epidemic worldwide, affecting adults as well as children and adolescents [5]. More than half of the adult population would be overweight or obese in 2030 [6].

It is currently estimated that in Africa, 20 to 50% of urban populations are classified as overweight or obese and that by 2025, three-quarters of the world's obese population will be in the developing country [7].

In view of the above, we set out in conjunction with the city of Mbujimayi to determine the prevalence of obesity and overweight among school-going adolescents.

General objective: Determine the prevalence of overweight and obesity in schools (case of EDAP/ISP of Mbujimayi).

Methods

Setting, type, period and study population

The School of Application of the Higher Pedagogical Institute of Mbujimayi (EDAP/ISP Mbujimayi) served as a research framework for this cross-sectional study focusing on adolescents in the final classes (5th and 6th year of humanities), 343 students were aged 15 to 19 years had consented to participate in the study.

Anthropometric study measurements and statistical analyzes

Age, sex, height, weight and body mass index were studied in these adolescents. The choice of gender was determined by each student depending on whether they considered themselves male or female. The weight was taken using a SECA brand electronic scale with a precision of 0.1 kg placed flat on the ground. The subject should be lightly dressed, unshod and standing. The weight was expressed in kg. The height was measured in a subject standing without shoes using a measuring rod allowing the precision of the 10th of a centimeter. BMI was calculated by dividing weight (Kg) by height (m²) [BMI= weight (Kg) over height (m²)]. Overweight and obesity are defined by BMI values greater than 25 kg/m² and 30 kg/m². The data collected was entered into an Excel 2016 spreadsheet and analyzed using SPSS 21.0 software. The data were presented as appropriate as a percentage, as a mean plus the standard deviation, the Pearson Chi 2 test was used to compare frequencies and the statistical sensitivity was set at a threshold less than or equal to 5%.

Ethical aspect

The confidentiality of the identity of consenting students was guaranteed. We received prior authorization from the school authorities to whom we had clearly explained the purpose of the study as well as the anthropometric sampling methods that we should use.

Results

Prevalence

Table 1. Prevalence of overweight and obesity

The prevalence of overweight and obesity is 3.4% and 2.2% respectively for all ages and sexes combined. Overweight and obesity have a female dominance tendency, (4.2% vs 2.9%) and (4.2% vs 0.9%).

Table 1: Prevalence of overweight and obesity

Variables	Sex		Total (%)
	Male n (%)	Female n (%)	
Normal	193 (96,0)	130 (91,5)	323 (94,1%)
Overweight	6 (2,9)	6 (4,2)	12 (3,4)
Obesity	2 (0,9)	6 (4,2)	8 (2,3)
Total	201	142	343 (100%)

Table 2. Prevalence of overweight according to age and sex

The average weight was 56.2 (6.5) including 56.8 for boys and 55.7 for girls. And this average weight increases almost systematically with age, ranging from 48.7 (8.1) to 62.6 (5.5) for boys and from 46.5 (6.9) to 55.7 (6.0) for girls. And this age-dependent variation is statistically found (P value varying from 0.003 to 0.000).

Table 2: Prevalence of overweight according to age and sex

Variables	Boys		Girls		P Value
Age (years)	(n=208)	Middle weight (Kg) (SD)	(n=142)	Middle weight (SD)	
15	19	48,7 (8,1)	24	46,5 (6,9)	0,003
16	73	54,3 (6,5)	52	52,2 (5,3)	0,009
17	51	58,3 (7,9)	26	55,9 (7,7)	0,007
18	36	60,1 (7,4)	27	62,3 (4,8)	0,024
19	22	62,6 (5,5)	13	61,9 (5,7)	0,000
Midsized	208	56,8 (7,0)	142	55,7 (6,0)	
Average Weight combined 56,2 (6,5)					

Table 3. Height distribution by age and sex

The average height of students in the final year was 160.5 (7.3) with an average height for boys of 164.9 (8.0) and for girls 156.0 (6.6). By gender, the highest average height was observed in boys aged 18, 167.3 (10.1) and in girls aged 17 with an average height of 159.2 (4.2). Height was not necessarily influenced by age in the near-finalist students.

Table 3: Height distribution by age and sex

Variables	Boys		Girls		P Value
Age (Years)	(n=208)	Midsized (SD)	(n=142)	Midsized (SD)	
15	19	164,3 (9,2)	24	158,5 (8,1)	(0,061)
16	73	161,5 (6,4)	52	151,8 (6,7)	(0,006)
17	51	164,9 (7,6)	26	159,2 (4,2)	(0,000)
18	36	167,3 (10,1)	27	153,2 (6,3)	(0,003)
19	22	166,6 (6,8)	13	157,7 (8,0)	(0,074)
Midsized	201	164,9 (8,0)	142	156,0 (6,6)	
Average size combined 160,5 (7,3)					

Table 4. BMI repair by age and sex

The average BMI of students in final year classes was 21.4 (9.6) with an average BMI for boys of 21.0 (7.2) and for girls 21.8 (10.9). By gender, the highest average BMI was observed in 18-year-old boys, 24.0 (6.1) and in 18-year-old girls with an average BMI of 23.1 (3.7). BMI was not necessarily influenced by the age of subjects with statistical evidence (P value ranging from 0.001 to 0.013) given the fact that, although weight increased systematically with age, height did not follow the same trend.

Table 4: BMI repair by age and sex

Variables	Boys		Girls		P Value
Age(years)	(n=201)	Average BMI (Kg/m ²) (SD)	(n=142)	Average BMI (Kg/m ²) (SD)	
15	19	19,2 (9,2)	24	21,4 (3,1)	0,001
16	73	20,1 (6,4)	52	20,3 (2,8)	0,008
17	51	18,6 (7,6)	26	19,1 (4)	0,001
18	36	24,0 (6,1)	27	23,1 (3,7)	0,024
19	22	23,4 (6,8)	13	21,5 (2,6)	0,013
Average BMI	201	21,0 (7,2)	142	21,8 (10,9)	
Combined average BMI 21,4 (9,6)					

Discussion

Prevalence

The prevalence of overweight and obesity is 3.4 and 2.2% respectively with a female predominance trend. The prevalence of overweight and obesity varies significantly across the world among young people. According to some researchers, the prevalence of overweight varies from 8 to 18.8 [8-18] and that of obesity from 1% to 24.3% [8-18]. Compare the Congolese reality between the cities of Mbuji mayi and Lubumbashi, there are more overweight young people in school in Lubumbashi than in Mbuji mayi (8% vs 3.4%) and more obese young people in Mbuji mayi than in Lubumbashi (2.3% vs. 1%) [8]. It should be noted that the present dissertation is unicentric while that of Lubumbashi was multicentric.

The predominance of overweight and obesity according to gender is constantly variable depending on the geographical location, the age of the children considered as well as the size of the sample [8-18]. In Congo DR, in schools, girls seem to be victims of this new global epidemic of overweight and obesity [8]. In our series, more than half of the subjects (201) or 59.4% were boys, 142 or 39.6% were girls, this result is close to that reported by kaoutar kJ hilali Mk, Loukid M. *et al* noted that 53.5% of adolescents were and 46.5% were girls [1]. Socio-cultural constraints associated with the local traditional desire to promote male education to the detriment of female education would explain the male predominance in this research.

Weight by age and sex

There is statistical evidence that the average weight of the adolescents under examination increased with age. This observation is shared by Fedala N, Mekimine L, Haddam AEM, Fedala *et al*, who obviously found that weight gain is associated with aging or increasing age [6].

Height by age and sex

The average height of adolescents in final grades is 160.5 (7.3) cm. This height peaked at 164.9 (8.0) cm and 156.0 (6.6) cm for boys and girls, respectively. The height of these adolescents was invariably associated with their age. Taking into consideration a similar study carried out in Lubumbashi, the adolescent in the final year of the town of Mbuji mayi had a larger average height than that of the adolescents in Lubumbashi [160.5 (7.3) cm vs 151.30 (13.09) cm] (1).

BMI according to age and sex

The average BMI of students in final year classes was 21.4 (9.6) with an average BMI for boys of 21.0 (7.2) kg/m² and for girls 21.8 (10.9) kg/m². By gender, the highest average BMI was observed in boys aged 18, 24.0 (6.1) kg/m² and in girls aged 18 with an average BMI of 23.1 (3.7) kg/m². The BMI was not necessarily influenced by

the age of subjects with statistical evidence (P value ranging from 0.001 to 0.013) taking into account the fact that, although weight increased systematically with age, height did not follow the same trend. This result is higher than that of Sebbani M, Elbouchti I *et al*, the average BMI is 19.39 (3.39) kg/m² respectively 18.82 (3.25) kg/m² for boys and 18.17 (2.71 kg/m²) for girls [4].

Conclusion

Obesity and overweight are a global epidemic whose incidence and prevalence are worryingly increasing. This constant is valid for all ages, all genders, all races and all geographic locations combined. School-going adolescents in Mbuji mayi town are no exception to this global trend.

Conflict of Interest

The authors declare no conflict of interest.

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