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RESEARCH ARTICLE

Impact of Socioeconomic Factors and Lifestyle on Prevalence of Obesity among High School Students in the City of Settat

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Abstract

Objective: To determine the prevalence of overweight and obesity in schools, as well as the lifestyle and socioeconomic factors that influence them.

Methods: We conducted a survey on a sample of 1237 students aged 12 to 19 years and studying in public and private high schools in the city of Settat. The excess weight of students was assessed by body mass index –BMI–, and the references used are those of french curves (BMI above the 97th percentile).

Results: The total number of students was 1237 with 644 as girls and 593 boys. The average age was 14.3 years (14.5 years for boys and 14.2 years for girls). The percentage of obese teenage students in the city of Settat is 13.74%. There is a clear difference between the public and the private sectors. In fact, obesity is recorded at 9.85% in public sector schools against 23.07% in private ones. The predominance of obesity girls is statistically significant; 15.06% for girls against 12,31% for boys.

Conclusion: The prevalence of overweight and obesity in Morocco is low, yet it does exist. Monitoring, prevention and the introduction of response measures are necessary to prevent its future proliferation as happened in developed countries.

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INTRODUCTION

In recent years, obesity has become a real threat to public health. The number of people affected by this plague is incessantly growing. Defined as excessive body weight following a prolonged positive energy balance (1), obesity may be due to genetic, nutritional, or social factors (2).

In France, the prevalence of obesity has tripled over a period of 15 years, rising from 5.1% in 1985 to 16% in 2000 (3). In Morocco, data show a steady increase of obesity in recent years. In fact, it has increased from 4.1% in 1984/1985 to 10.3% in 1998/1999. In 2000, more than 13% of individuals aged over 20 years are suffering from obesity (4).

Obesity has harmful effects on the physical and mental health. Indeed, several symptomatic diseases have been described in association with obesity. In some cases, obesity is not associated with physical sufferings only, but also with psycho-social difficulties (5). Additionally, in the case of children and teenagers, obesity presents a significant risk of persistence into adulthood (6).

Objectives of the study:

The present study's objectives are:

- To measure the prevalence of obesity among high school students in the city of Settat; and
- To analyse the factors associated with overweight in terms of eating habits, exercise and lifestyle in general.

This study will also serve to compare the lifestyle and habits of teenagers in light of their parents' socio-economic level.

Methodology:

The survey was conducted with a sample of 1237 teenagers enrolled in six public and private schools, studying in the final year of junior high school (9th grade) in the city of Settat. The schools selected are Moulay Ismail, Esmara and Moulay Abdellah (public schools), and Chaouia, Zaitoun and Bouchra (private institutions).

The survey involved:

- Weight measures on a scale, to 100 grams
- Measures of waist and trunk contours in centimetres;
- A questionnaire relating to the teenager's daily life.

The BMI (body mass index) was calculated for each student and its value entered on the weight curve. Each student was classified according to their BMI, age and gender in one of the following categories: Obese (BMI above the 97th percentile), normal (BMI between the 3rd and 97th percentile) and thin (BMI less than the 3rd percentile). The statistical processing of results was conducted by analysis of variance.

Results:

Characterization of the sample:

The sample was made up of 1237 teenagers, including 644 girls (or 52% of the total). The distribution of the sample per the different schools under study is detailed in table I.

The public sector accounted for 70.5% of the total sample studied, with 51% as girls compared to 54% in the private sector.

Table I: Characterization of the sample under study

Institution	Sector	Number of students	% Girls
Moulay Ismail	Public	433	57.5
Essmara	Public	122	39.3
Moulay Abdellah	Public	318	46.8
G. S. Bouchra	Private	75	52
G. S. Olivier	Private	198	52
G. S. Chaouia	Private	91	61.5

The average age of the students at the time the survey was 14.3 years (14.5 years for boys and 14.2 years for girls). The sample's distribution per gender and per institution is shown in table II.

Table II: Sample distribution as per age, gender and type of educational institution

Type of institution	Mean age	Girls	Boys
Public	14.7 years	14.5 years	14.9 years
Private	13.6 years	13.6 years	13.6 years

The age difference between the public and the private sectors, of almost one year, is due to the fact that access to primary education occurs generally at of age 5 for the private sector and at the age of 6 in the public sector.

Prevalence of obesity:

The results obtained after processing the data collected are shown in table III.

Table III: Prevalence of obesity within the entire sample

Condition	% Total	% Public	% Private
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Obese	13.74	9.85	23.07
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The percentage of obese teenage students in the city of Settat is 13.74%. There is a clear difference between the public and the private sectors. In fact, obesity is recorded at 9.85% in public sector schools against 23.07% in private ones. These figures present a multiplicative factor of 2.3.

Analysis of the prevalence of obesity per gender produced the results detailed in tables IV and V.

Table IV: Prevalence of obesity among female students

Condition	% Total	% Public	% Private
Obese	15.06	11.20	23.73

Table V: Prevalence of obesity among male students

Condition	% Total	% Public	% Private
Obese	12.31	8.43	22.28

The analysis of these findings shows that:

- The prevalence of obesity is higher among girls than among boys, regardless of the type of institution they attend.
- The prevalence of obesity is higher in the public sector than in the private one, irrespective of the gender examined.
- The prevalence rates of obesity are very close among students from the private sector, but are quite disparate among the two genders in the public sector.

Similar results were described for a population sample of children aged 5 to 15 years from the city of Marrakech. The prevalence of excess weight was 12.2% and obesity was found in 5.4% of the children (7). In the Maghreb region, the prevalence of overweight and obesity is 23.1% among Algerian children aged 6 to 12 years (8). In Egypt, 14% of children aged 10 to 19 suffer from excess weight or obesity. In countries of southern Europe, the prevalence of excess weight among Spanish children aged from 6 to 7 years stands at 35% (9). In Portugal, this figure exceeds 30% (10), in Italy it is estimated at 36% (11) and in Greece excess weight or obesity affect 30% of this age bracket (12).

Eating habits and physical activity:

Two behaviour patterns condition the occurrence of obesity. These are the low practice of physical and sporting activities and an inappropriate diet (13).

The daily food intake usually consists of three main meals (breakfast, lunch and dinner) with a snack in the morning and afternoon tea.

Of the entire sample, 40.9% of students report a two-time daily food intake against 59.1% who reported taking three meals a day.

All the obese students indicated their consumption of three meals a day, against 36.3% of the students with a normal body weight.

Obese students also admitted to snacking between meals. These snacks consist of foods with very high fat and sugar contents such as cookies, ice cream, pizza and soda. Similar findings to these were described at length by several authors (14, 15).

A sedentary lifestyle, assessed in this study by the average time spent in front of television or the computer, reveals this time to be $5.18 \text{ h} \pm 2.44$ during weekends and holidays, against 2.64 ± 1.25 p.m. during week days. Students with a normal body weight declare they spend fewer hours watching TV than obese students (27.2% against 72.7%). These figures are higher than those described in France (16), but quite close to those reported in Algeria (17).

This study also showed that the majority of students engage in a sporting activity in their educational institutions, but the weekly average of this activity does not exceed 1.5 hours.

Outside school, 68.2% of students report a regular practice of some sport activity, 46.7% practice this activity once a week, 46.2% practice it twice a week and 7.1% it three times a week.

Similarly, a clear majority of students (90.9%) walk to school, the average walking time being 16.16 minutes. Others are driven to school by parents or as school bus.

Conclusions:

Working with a sample of 1237 high school students from the city of Settat, we found that the prevalence of obesity is higher among students of private schools versus public schools. This prevalence increases with the socio-economic

level and living conditions of parents. Certain parameters can explain this prevalence, namely a sedentary lifestyle expressed in the number of hours spent in front of television or the computer, snacking, and the lack of physical activity.

This study shows the need for monitoring measures and sensitization campaigns to develop prevention strategies through the involvement of teaching staff and parent-teacher associations.

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