



(RESEARCH ARTICLE)



IMPACT OF THE EATING BEHAVIOR OF STUDENTS AT THE LYCÉE MODERNE DE SONGON (ABIDJAN) ON THEIR NUTRITIONAL STATUS

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ABSTRACT

The eating behavior of schoolchildren directly influences their nutritional status and growth. The objective of this study was to describe the eating behavior of students at the Lycée Moderne de Songon (Abidjan) and to assess its impact on their nutritional status. This descriptive and analytical cross-sectional study was conducted among 214 students and covered sociodemographic characteristics, anthropometric parameters and eating habits (timing, frequency, carbohydrate and protein sources of meals, sports activity). The study sample comprised 52.34% girls and 47.66% boys, with a mean age of 13.35 ± 1.45 years and a mean body mass index (BMI) of 18.23 ± 2.97 kg/m². The prevalence of underweight was 8.41% and that of overweight 6.54%, and 85.05% of the students had a normal nutritional status. No statistically significant association was observed between nutritional status and the timing of the main meal ($p = 0.439$), daily meal frequency ($p = 0.855$), carbohydrate source ($p = 0.597$), carbohydrate accompaniment ($p = 0.794$), protein source ($p = 0.309$), type of sports activity ($p = 0.877$), its frequency ($p = 0.677$) or its daily duration ($p = 0.185$). Although the nutritional status of most students remains satisfactory, the coexistence of underweight and overweight calls for nutritional vigilance in the school setting, beyond the eating behaviors studied here.

Keywords: Eating Behavior, Nutritional Status, Adolescents, BMI, School Setting.

1 INTRODUCTION

Nutrition education of children and adolescents worldwide has been the subject of several studies. These research topics are generally motivated by adolescents' eating behavior.

Eating behavior is defined as the process of an individual's spontaneous food intake. It is the set of actions performed by an individual or a group of individuals to satisfy their food needs, or their attitude during food intake [1,2]. From these standpoints, eating behavior would be the set of an individual's conducts toward the foods they consume, including food choices [3]. According to the literature [4-6], adolescence is a period of growth and transition between childhood and adulthood. During this period, adolescents need a good diet to support the development of their body. This diet must be rich and balanced to meet their growth needs. However, adolescents' eating behaviors are often influenced by social and cultural factors, as well as by peer pressure, which can lead to unbalanced eating habits [7]. These changes may be physical, cognitive, emotional and social [8] and can significantly influence young people's behaviors, including their diet.

Diet is defined as the ingestion of food to supply the whole organism with the nutritional requirements it needs. It is a process by which living beings consume different types of food to obtain the nutrients necessary for the body. In growing children and young people, diet is just as essential, because for their growth, energy requirements call for a sufficient intake of nutrients adapted to their increased needs [9].

However, ensuring a good diet is often not easy, because the foods essential for the child's growth and good health must be selected. It is in this context that a diversified and varied diet is recommended, particularly one rich in protein [10], lipids [11], carbohydrates [12], and vitamins and minerals.

It is in this context that the present study was conducted at the Lycée Moderne de Songon (Abidjan), with the general objective of determining the impact of students' eating behavior on their nutritional status. More specifically, the aim was to describe the sociodemographic and anthropometric characteristics of the students, to assess their nutritional status by sex, and to analyze the links between this nutritional status and the various components of their eating behavior (meal frequency and the carbohydrate source of these meals).

2 MATERIALS AND METHODS

2.1 Type, setting and period of the study

This was a cross-sectional study with a descriptive and analytical aim, carried out from January to March 2026 at the Lycée Moderne de Songon, located in the commune of Songon (Abidjan).

2.2 Study population

The study involved 214 students of the Lycée Moderne de Songon, comprising 112 girls (52.34%) and 102 boys (47.66%), selected according to the inclusion and exclusion criteria specific to the study protocol.

2.3 Data collection

Sociodemographic, anthropometric (weight, height, body mass index [BMI]), hemodynamic (systolic and diastolic blood pressure [BP], heart rate) and eating behavior data (meal frequency and the carbohydrate source of these meals) were collected using a structured questionnaire and standardized anthropometric measurements.

The nutritional status level is good when the subject has a good nutritional status by reference to the corpulence (BMI-for-age) curves for girls and boys among adolescents (under 18 years).

2.4 Statistical analysis

Data were entered and analyzed using statistical software. Quantitative variables were expressed as mean $\pm$ standard deviation and qualitative variables as counts and percentages. Fisher's exact test was used to look for an association between nutritional status and the eating behavior variables, with the significance level set at $p < 0.05$.

2.5 Ethical considerations

This study was conducted with the approval of the management of the National Institute of Youth and Sports (INJS) (N°: 2026/INJS/DFCR/432-07-02-26) and the management of the Lycée Moderne de Songon.

3 RESULTS AND DISCUSSION

3.1 Sociodemographic characteristics

Table I presents the sociodemographic characteristics of the 214 students studied. The sample was slightly dominated by girls. Most students were non-orphans and lived in a two-parent family. The heads of household most frequently had a secondary or university level of education, and were mostly public-sector employees, private-sector employees or traders.

Table 1: Description of the subjects according to their sociodemographic characteristics

Sociodemographic characteristics	Number	Percentage (%)
Sex		
Girl	112	52.34
Boy	102	47.66
Parental status		
Non-orphan	191	89.25
Orphan of one parent	17	7.94
Orphan of both parents	6	2.80
Family situation		
Two-parent family	136	63.55
Single-parent family	34	15.89
Blended family	12	5.61
Extended family	21	9.81
Guardian	11	5.14
Head of household's level of education		
None	21	9.81
Primary	24	11.21
Secondary	90	42.06
University	79	36.92
Head of household's occupation		
Craftsperson	9	4.21
Trader	57	26.64
Private-sector employee	60	28.04
Public-sector employee	62	28.97
Retired	7	3.27
Unemployed	19	8.88
Total	214	100

3.2 Anthropometric and nutritional parameters by sex

Table II presents the mean values of the anthropometric, hemodynamic and nutritional parameters of the students according to sex. Girls had higher mean weight, BMI and heart rate than boys, whereas boys had slightly higher mean height and systolic blood pressure; mean age and diastolic blood pressure were similar in both sexes.

Table 2: Mean values of the anthropometric and nutritional parameters of the subjects by sex

Parameters	Girls	Boys	Total
Age (years)	13.39 ± 1.44	13.29 ± 1.47	13.35 ± 1.45
Height (cm)	155.94 ± 6.81	156.51 ± 11.39	156.21 ± 9.26
Weight (kg)	46.24 ± 8.70	43.18 ± 10.26	44.78 ± 9.58
BMI (kg/m ²)	18.98 ± 3.16	17.41 ± 2.51	18.23 ± 2.97
Systolic BP (mmHg)	109.16 ± 13.94	112.75 ± 16.51	110.87 ± 15.29
Diastolic BP (mmHg)	77.51 ± 12.64	78.06 ± 13.60	77.77 ± 13.08
Heart rate (beats/min)	85.68 ± 12.43	78.52 ± 12.22	82.27 ± 12.82

3.3 Nutritional status by sex

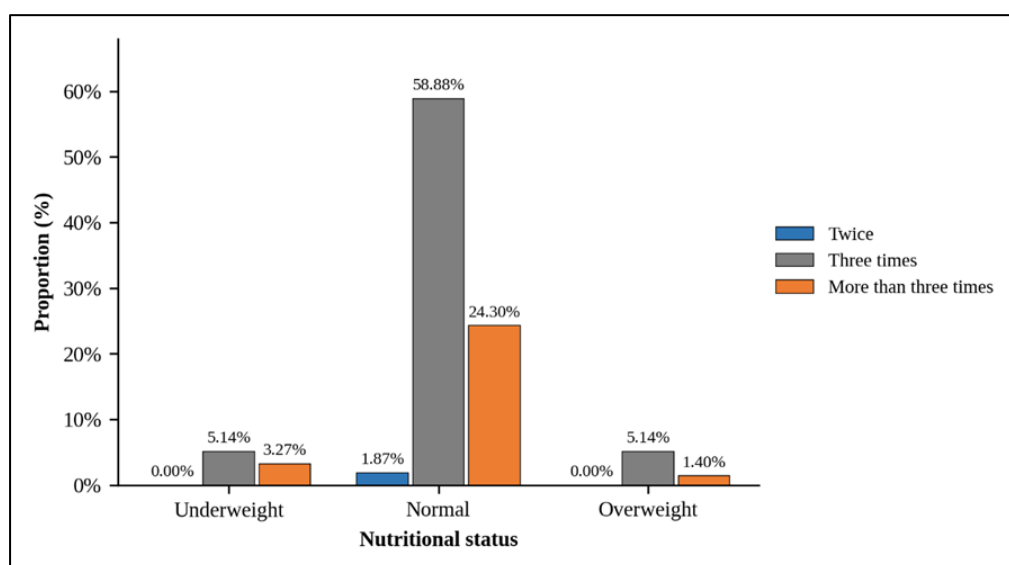
Table III presents the nutritional status of the students according to sex. Most students had a normal nutritional status. Underweight was more frequent among boys, whereas overweight was more frequent among girls.

Table 3: Description of the nutritional status of the subjects by sex

Nutritional status	Girl (n)	Girl (%)	Boy (n)	Boy (%)	Total (n)	Total (%)
<i>Underweight</i>	6	5.36	12	11.76	18	8.41
<i>Normal</i>	96	85.71	86	84.31	182	85.05
<i>Overweight</i>	10	8.93	4	3.92	14	6.54
Total	112	100	102	100	214	100

3.4 Nutritional status and daily meal frequency

Figure 1 presents the distribution of the students according to nutritional status and daily meal frequency. Whatever the nutritional status, the most frequent pattern was three meals a day, followed by more than three meals a day. No significant association was found between daily meal frequency and nutritional status (Fisher's exact test, $p = 0.855$): weight status was not related to daily meal frequency.

**Figure 1: Distribution of the subjects according to nutritional status and daily meal frequency**

3.5 Nutritional status and main carbohydrate source of meals

The distribution of the subjects by nutritional status and the main carbohydrate source of the subjects' meals reveals no statistically significant link between weight status and the type of carbohydrates usually consumed (Fisher's exact

test, $p = 0.597$; Figure 2). However, the study shows that, whatever the nutritional status of the respondents, the carbohydrate source of the meals is plantain, followed by rice and then cassava.

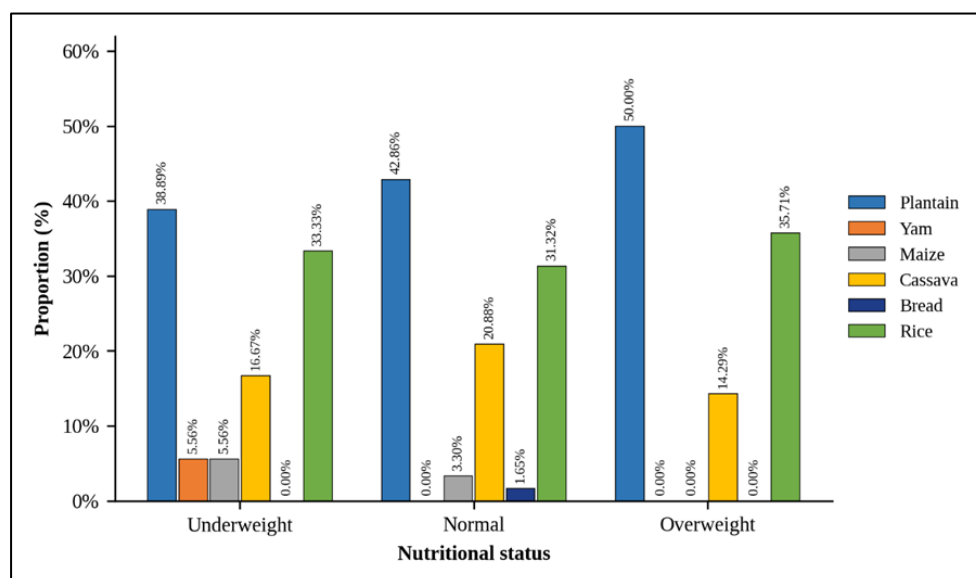


Figure 2: Distribution of the subjects according to nutritional status and the main carbohydrate source of the subjects' meals

3.6 Discussion of the sociodemographic and anthropometric profile

The sample studied is characterized by a slight female predominance (52.34% versus 47.66%) and a mean age of 13.35 years, consistent with the age range usually enrolled in lower secondary school. Most students (89.25%) are not orphans and mostly (63.55%) live in a two-parent family, which a priori constitutes a family environment favorable to adequate nutritional follow-up, the family playing a central role and being recognized as a predictor of adolescents' food choices [13-15]. The level of education and the occupation of the heads of household, which are rather diverse, reflect a socioeconomic heterogeneity of the study population; a low level of parental education has moreover been associated with a poorer-quality diet [16], which deserves to be examined more closely in relation to the students' nutritional status in a complementary analysis.

3.7 Discussion of the nutritional status of the students

The prevalence of underweight (8.41%) and that of overweight (6.54%) observed in this study, assessed from the body mass index, the indicator most widely used to appraise corpulence and nutritional status [17-19], show the coexistence, within a single school population, of the two extremes of the interpretation of nutritional status, a phenomenon commonly reported among adolescents in a context of nutritional transition [20,21]. The higher proportion of underweight boys (11.76% versus 5.36% in girls) and, conversely, the higher proportion of overweight girls (8.93% versus 3.92% in boys) is consistent with observations that girls, and adolescent girls in particular, would be at greater nutritional risk than boys [22], and could be explained by physiological differences in body composition and by eating or physical activity behaviors that differ according to sex and age [23-25].

3.8 Discussion of eating behavior and nutritional status

The study shows that adolescents frequently consume energy-dense foods, namely starchy foods (plantain, rice and cassava). This study is similar to that of Anko et al. [26], who showed in their study a high consumption of energy-dense foods among adolescents in the commune of Yopougon.

A proportion of overweight subjects (6.54%) was observed in this study. This weight gain observed among African adolescents extends across several countries, notably Côte d'Ivoire, where more than 1.13% of the adolescent population, according to Kouakou et al. [27], is obese. This proportion of young people with obesity tends to be higher in urban agglomerations marked by particular living conditions and habits (National Institute of Statistics [INS] [28]).

Contrary to what might have been expected in view of the literature, which notably emphasizes the role of breakfast, estimated at about 25% of the total daily energy intake, in intellectual performance and the prevention of excess weight [29,30], none of the components of eating behavior studied here (daily meal frequency, carbohydrate source) appeared statistically associated with the students' nutritional status. This result is nevertheless consistent with the conclusions reported in the literature concerning the link between eating habits, such as snacking, and body mass index [31]. This

lack of significance may be explained by the relatively small size of some subgroups (notably the numbers of underweight and overweight subjects), which limits the statistical power of the tests performed, but it may also reflect the weight of other determinants not measured in this study, such as the actual quantity of food consumed, the overall nutritional quality of the diet, the family and social environment [32], or individual genetic and metabolic factors.

4 CONCLUSION

This study shows that, although most students of the Lycée Moderne de Songon have a normal nutritional status, a non-negligible proportion are underweight or overweight, with differences by sex. No statistically significant association was found between nutritional status and the components of eating behavior studied (daily meal frequency and carbohydrate source of meals). These results suggest that other determinants, not explored in this study, probably play a role in shaping the students' nutritional status. They nevertheless underline the need to maintain nutritional vigilance in the school setting and to investigate, through larger-scale complementary studies, the factors truly associated with underweight and overweight among school children

STATEMENTS ON COMPLIANCE WITH ETHICAL STANDARDS

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Disclosure of conflict of interest

The authors declare they have no conflict of interest.

Statement of informed consent

The authors state that prior to participating in this study, written consent was obtained from the students or their parents or legal guardians.

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