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Evaluation of nutritional and nosological status of students at Felix Houphouet-Boigny University in Cote d'Ivoire

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Abstract | **Original Research Article**

***Introduction*:** Health of students is an essential factor in acquisition of knowledge and in development of human capital in general. ***Aim*:** This study was conducted in order to descriptive the nutritional and health situation of students of Felix Houphouët University of Côte d'Ivoire. ***Methodology*:** In fact, a nutritional and health assessment survey was carried out from October 15, 2016 to February 17, 2017 in a population of 1228 students dominated by male with middle-aged of 22.5-year-old. ***Results*:** It revealed a panoply of diseases with a predominance of digestive disorders. According to the literature and previous studies done at Felix Boigny University, this could be linked to exposure to stress, inadequate environmental and dietary conditions. This nosological situation is not without consequence on the nutritional state, indeed the prospective analysis of the body mass index of the surveyed, showed a nutritional state quite degraded with 5.29% of leanness, 9, 13% overweight and 2.20% obesity. ***Conclusion*:** In view of these results we note that the health status of students is precarious and stationary with respect to the results of previous studies. Faced to this worrying situation, it is urgent to carry out awareness campaigns on all university campuses in the country to improve the nutritional behavior, nosological status and nutritional status of students.

Keywords: Nutritional and health, digestive disorders, Felix Boigny University, awareness campaigns.

INTRODUCTION

Health of students and pupils is an essential factor in the acquisition of knowledge and in the development of human capital in general. In the world of research, studies are increasingly focusing on the health of learners with a view to improving their living conditions (WHO, 2006). In Côte d'Ivoire, some documents provide information on the health care needs of students. In 2016, an epidemiological study carried out at the Felix Houphouët Boigny University in Abidjan revealed inadequate eating habits in the student population (Amoikon *et al.*, 2016). In 2017, a second study measured and described the supply of healthcare services, needs and barriers to healthcare use in this same population. It identified numerous barriers to accessing care and several other health problems. A Swiss study showed that students had more health problems than the rest of the population of the same age (Etter and Pernege, 1997). In France, the work of Thiel *et al.*, (2023) also found poor psychosomatic health in the majority of student nurses in Lorraine. This study was carried out with a view to continuing investigations into the subject and contributing to the active search for solutions to improve students' living conditions. Its aim is to assess the nosological and nutritional status of students at the Université Felix Houphouët Boigny.

MATERIALS AND METHODS

Materials

The study was carried out in West Africa, in Côte d'Ivoire, at Félix Houphouët Boigny University, Cocody, Abidjan. All students, enrolled in the second year of Chemistry Biology Geology (CBG), studies at Félix Houphouët Boigny University, who wished to participate in the study, were included. They were not included in the study, nor were any other people who did not comply with the aforementioned conditions. The survey data were collected using a questionnaire designed for this purpose and validated by a pre-survey of 45 students at the NIAMEY Regional Centre Agrhymet (NIGER) in February 2016. It was structured

in two parts: (i) the first part traced the socio-demographic characteristics of the study population and their anthropometric measurements (weight, height), (ii) the second part revealed the results of the clinical examination and medical history regularly experienced by the patients over a period of one year (not necessarily continuous) and their anthropometric measurements (weight, height).

Methods

- Type of Study

This is, a prospective cross-sectional study with descriptive and analytical aims based on a nutritional and health assessment, which took place over the period from October 15, 2016 to February 17, 2017. A total of 1,228 students volunteered to take part in the study.

- Health Assessment

The assessment of health status was based on a clinical examination consisting of an interview and a physical examination looking for clinical signs. For reasons of financial resources, it was not possible to carry out paraclinical examinations on all patients. However, those showing signs of pathological complications benefited from paraclinical investigations and treatment in collaboration with the University Hospital of Cocody (Abidjan).

- Assessment of Nutritional Status

Nutritional status was determined by calculating BMI based on weight and height. Weight was assessed using a SECA brand weighing scale manufactured in Hamburg, GERMANY, by the SECA company. Measurements were taken in accordance with WHO recommendations (WHO, 1989). As for height, we used an adult height gauge manufactured by healh medical France, measured to the nearest centimetre. Measurements were also taken in accordance with WHO recommendations (WHO, 1989).

BMI (kg/m^2) = weight (in kg)/height (in m^2)

Several thresholds were used to assess students' nutritional status (WHO, 1989):

- BMI (kg/m^2) < 18.5 kg/m^2 : Underweight
- 18.5 kg/m^2 ≤ BMI ≤ 25 kg/m^2: Normal weight
- BMI > 25 kg/m^2 : Overweight

- Statistical Analysis

Quantitative and qualitative data were collected. Analysis was performed using SPSS 20 software. Graphs were produced using Excel 2013. For quantitative variables, the mean, standard deviation and extreme values were highlighted. For qualitative variables, the proportion distribution was used.

- Ethical Considerations

With regard to ethical considerations, volunteers were informed of all stages before the start of the survey, and were interviewed or examined following free and informed consent. Confidentiality was assured by assigning an anonymity number to each survey form. This study was approved by the Université Felix Houphouët Boigny of Côte d'Ivoire, and the ethical principles of the Declaration of Helsinki were respected.

RESULTS AND DISCUSSION

Results

Socio-Demographic Characteristics

In terms of socio-demographic criteria, three parameters were analyzed: ethnic group, age and gender. In terms of ethnic group, the Akans are the most represented with 621 people. The Gour, the Krou, the North and South Mandé are 182, 161, 109 and 124 respectively, and foreigners are the least represented with 31 people (figure 1). In terms of age, the population was subdivided into 3 groups. Respondents aged between 17 and 19 account for 20%, while those aged between 20 and 24, and, 25 and over, account for 77% and 3% respectively (Figure 2). Within this population, 74% were male, compared with 26% female (Figure 3).

- ***Ethnic Group***

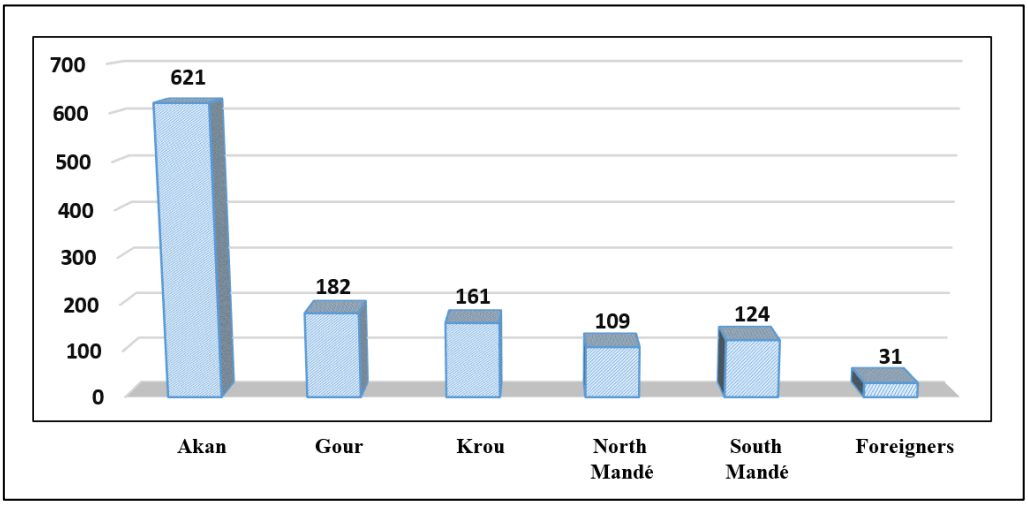

Figure 1: People surveyed by ethnic group

- ***Age***

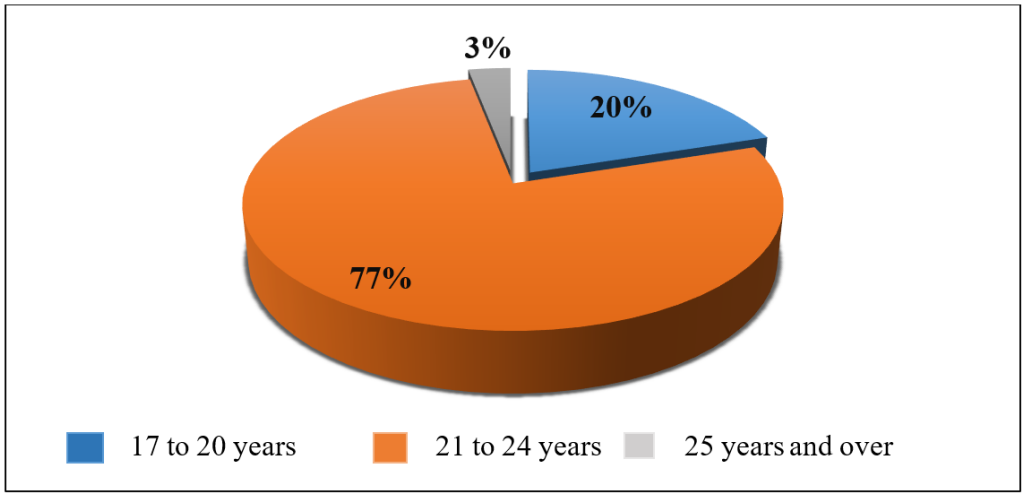

Figure 2: People surveyed by age

- ***Gender***

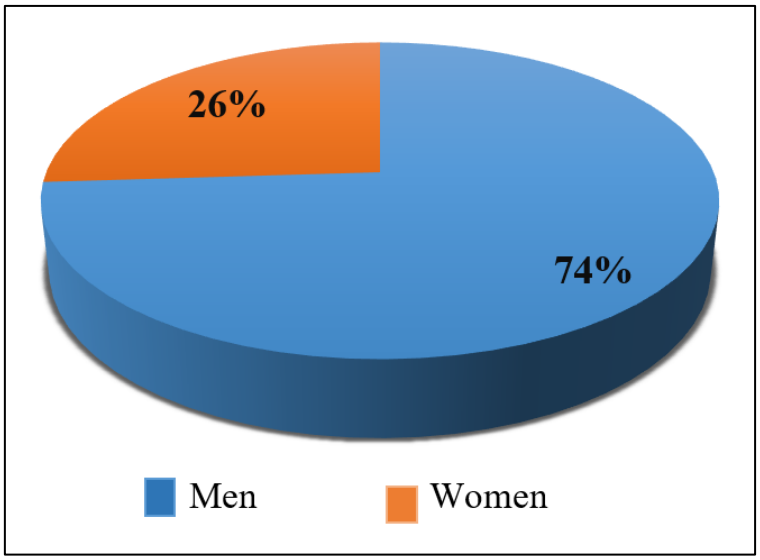

Figure 3: People surveyed by gender

Nosological status of the surveys

- In order to assess their health status, the volunteers were asked about the pathologies and signs frequently presented. In terms of the digestive system, diarrhea and constipation were the most frequent. They were present respectively in 706 (57.5%) and 652 (53.1%) of those surveyed. The least frequent digestive pathologies were epigastralgia (24.5%) and gastric reflux (29.80%). In addition, 47.6% of students suffered from irritable bowel syndrome and 39.70% from haemorrhoids (Figure 4).
- In terms of the respiratory and cardiovascular systems, the most frequent pathology was rhinopharyngitis (53.80% of respondents), while dyspnea and cardiac palpitation were found in 412 respondents (33.6%) and 418 (34.04%) respectively (Figure 5).
- Cutaneous-mucosal, locomotor and other systems: Pathologies such as cramp, ocular pruritus and eczema are the most common in this population, with proportions of 87.8%, 41.9% and 40.40% respectively. On the other hand, severe malaria, ocular redness and urticaria affect 9.8%, 12.10% and 37.90% respectively (Figure 6).

- ***Prevalence of Digestive Pathologies and Signs in the Population***

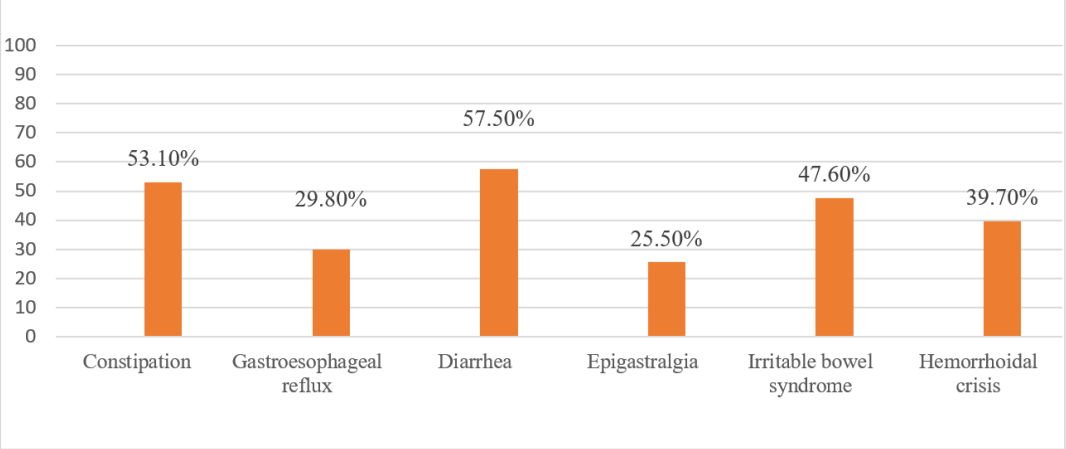

Figure 4: Frequency distribution of digestive pathologies in the study population. Number: 1228 individuals

- ***Prevalence of Cardiorespiratory Signs and Pathologies in the Population***

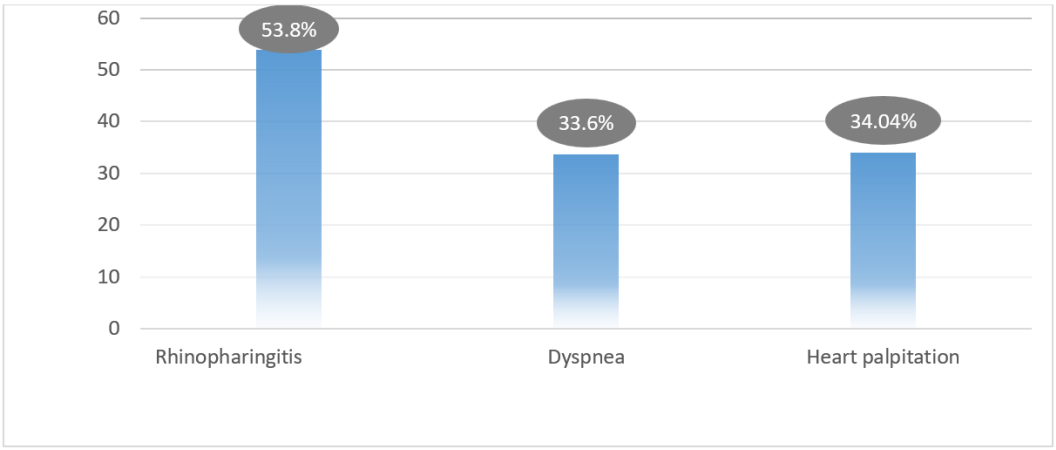

Figure 5: Distribution of the prevalence of respiratory and cardiac pathologies in the study population. Number: 1228 individuals

- ***Prevalence of Mucocutaneous, Locomotor and Other Pathologies in the Study Population***

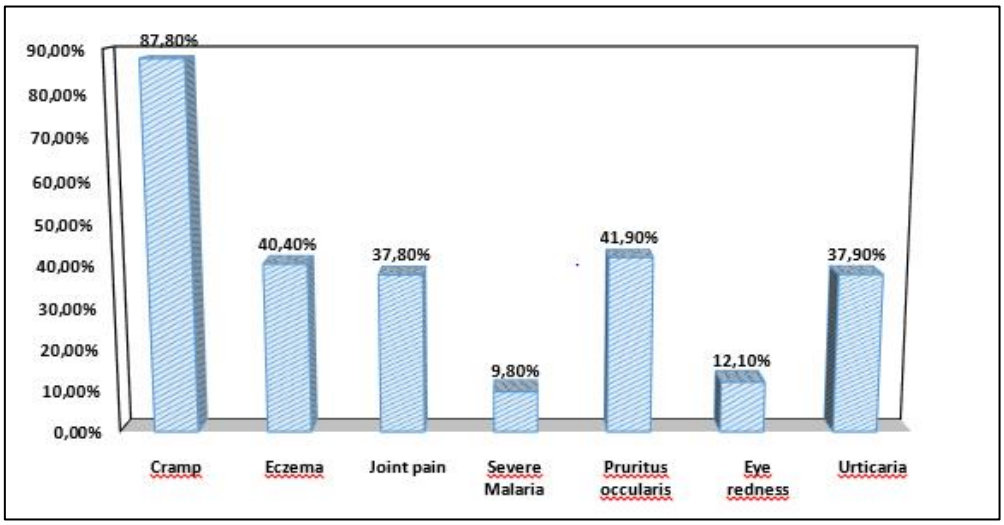

Figure 6: Distribution of the prevalence of pathologies of the mucocutaneous, locomotor and other systems in the study population

Nutritional Status of Surveyed

BMI was used to assess nutritional status. In this population, overweight and obesity were 9.13% and 2.90% respectively. As for thinness, its prevalence was 5.29% (Figure 7).

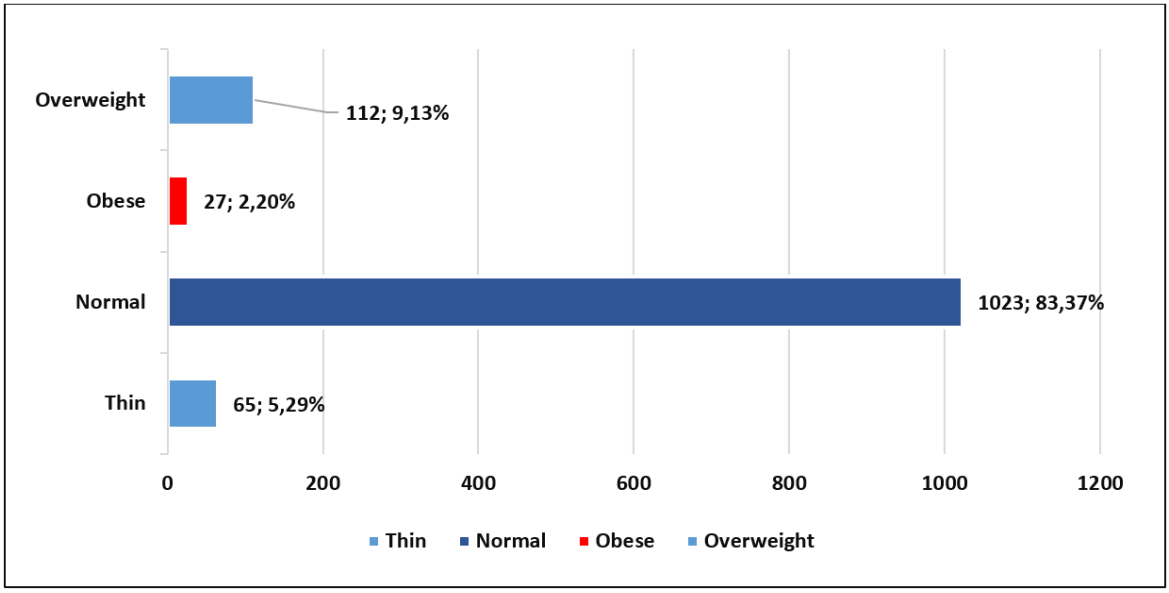

Figure 7: Distribution of study population by nutritional status

DISCUSSION

This study assessed the nutritional and nosological situation of students at the Université Félix Houphouët Boigny in Côte d'Ivoire. The predominant ethnic group of this students was the Akan, accounting for 51% of respondents. This could be explained by the geographical location of the Université Félix Houphouët Boigny d'Abidjan, which is more accessible to this group, especially as the Biosciences specialization is found in other universities in the country located in the north and centre-west. These results are comparable to those of Amoikon *et al.*, (2016). The study population was young with a mean age of 22.5 years and dominated by the male gender. This can be explained by the higher level of schooling among young boys than girls in Côte d'Ivoire (INS, 2015).

In this population, analysis of the respondents' health situation revealed several signs of illness. In terms of the digestive system, 39.73% of respondents frequently suffered from haemorrhoidal crisis manifested by rectorrhagia and anal pain or anal discomfort, whether or not associated with haemorrhoidal prolapse. These figures are close to those of Amoikon *et al.*, (2016) in Côte d'Ivoire, Dembélé *et al.*, (1994) in Mali and klotz *et al.*, (1988) in Gabon, who found 40.37%, 40.15% and 37.28% respectively in their study populations. Also, 53.1% of students suffered from constipation, a disease recognized for centuries as associated with an unstructured, unbalanced and water-poor diet (Dukan, 2011). In addition to hemorrhoids and constipation, on the digestive level, 24.5% of respondents frequently suffered from epigastralgia, 47.60% from digestive irritation syndrome, 29.80% from gastro-oesophageal reflux, and 57.5% from diarrhea. According to Dukan, all these digestive symptoms reflect a weakened digestive system (Dukan, 2011).

In addition to digestive pathologies, a number of respiratory, cardiovascular, mucocutaneous and other disorders were recorded. These included rhinopharyngitis 661 (53.80%), dyspnea/asthma 412 (33.6%), heart palpitation 418 (34.04%), ocular pruritus 514 (41.90%), ocular redness 149 (12, 10%), urticaria 465 (37.9%), eczema 496 (40.4%), joint pain 464(37.8%), muscle cramp 1078 (87.8%), and severe malaria 120 (09.80%).

According to the WHO, these pathologies are frequently associated with environmental factors such as stress, hygiene conditions and diet (food allergies) (WHO, 2006). Furthermore, studies show that students are frequently exposed to stress and inadequate nutrition (Boujut, 2013), (USEM, 2009). These reasons would justify the nosological condition in this study population.

Assessment of the respondents' nutritional status revealed a prevalence of 5.29% underweight, 9.13% overweight and 2.20% obese. A relationship could exist between this nutritional status and the students' health situation. Indeed, an individual's state of health and nutritional status are closely linked (WHO, 2006).

These rates are higher than those of their younger brothers aged 8 to 14 in the communes of Yopougon and Bingerville in Côte d'Ivoire, who in the work of Zahe *et al.*, (2017) showed that overweight and obesity was 6.8% and leanness 13.6%. In Morocco in a study of school-going adolescents aged 12-18, higher

rates were found, underweight and overweight were 7.2% and 9.1% respectively among 1407 adolescents (Kaoutar *et al.*, 2013). This difference in nutritional status may be due to individuals' lifestyles and changing dietary behavior.

CONCLUSION

Ivorian students are part of a population with a low socio-economic status, and are often exposed to worrying health and nutritional situations. This study revealed a panoply of signs of predominantly digestive diseases in their midst. According to the literature and previous studies carried out at the Université Felix Boigny, this condition can be explained by exposure to stress and inadequate environmental and dietary conditions. In addition, a prospective analysis of the body mass index of those surveyed revealed a deteriorated nutritional status, with 5.29% underweight, 9.13% overweight and 2.20% obese. In view of these results, it would be advisable to carry out awareness campaigns on all the country's university campuses with a view to improving students' eating behaviour, health and nutritional status.

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