Scientific Research Publishing

Food and Nutrition Sciences, 2023, 14, 1172-1182
https://www.scirp.org/journal/fns
ISSN Online: 2157-9458
ISSN Print: 2157-944X

Lifestyle Habits and Dietary Diversity among Medical Students at Université Gaston Berger (UGB) of Saint-Louis in 2023

Lebem Togtoga, Khadim Niang, Papa Ndiaye, Mamadou Saidou Bah

Department of Public Health and Social Medicine, Université Gaston Berger (UGB), Saint-Louis, Senegal
Email: togtoga.lebem@ugb.edu.sn

How to cite this paper: Togtoga, L., Niang, K., Ndiaye, P. and Bah, M.S. (2023) Lifestyle Habits and Dietary Diversity among Medical Students at Université Gaston Berger (UGB) of Saint-Louis in 2023. *Food and Nutrition Sciences*, **14**, 1172-1182.
https://doi.org/10.4236/fns.2023.1412073

Received: August 22, 2023
Accepted: December 17, 2023
Published: December 20, 2023

Abstract

Introduction: At university, habits, particularly eating habits, can negatively impact well-being. This study aimed to describe lifestyle habits and dietary diversity among medical students. Methodology: This was a cross-sectional, descriptive study, carried out at the UFR 2S of the University Gaston Berger from May 23 to June 3, 2023. The collection tool focused on sociodemographic characteristics, lifestyle habits and dietary diversity. Statistical analyzes were carried out using R software. Results: A total of 471 students participated in this study. Which corresponds to a participation rate of 89.2% with a M/F sex ratio of 1.66. The age of participants, varying from 18 to 32 years, had a median of 23 years and a mean of 22.4 years with a standard deviation of 2.2 years. Among the participants, 67.2% skipped breakfast, and 28.5% did not practice any physical sports activity. Alcohol and tobacco were consumed by 2.5% and 0.6% of participants, respectively. The most consumed foods were starchy foods (97.5% of men and 98.4% of women); and the least consumed were dark green leafy vegetables (21.9% of men and 15.1% of women) and offal (16.9% of men and 11.9% of women). The dietary diversity score was low for 31.9% of men and 28.7% of women. Conclusion: Certain lifestyle habits (skipping breakfast, dining late at night, lack of sports practice) of Medicine students at UGB can prove deleterious to their well-being. These students are at risk of developing several deficiencies in terms of food groups that are underrepresented in their diet. Awareness sessions on good lifestyle habits and diet would be relevant recommendations for improving the health of these students.

Keywords

Lifestyles, Dietary Diversity, Students, UGB, Senegal

1. Introduction

A life habit is a current activity or a social role valued by the person or their sociocultural context according to their characteristics [1]. Diet is part of lifestyle habits and is evaluated using indicators such as dietary diversity. This is a qualitative measure of food consumption, which reflects the variety of foods in the diet. It constitutes, at the individual level, an approximate measure of the nutritional adequacy of the diet [2].

Bad lifestyle habits (tobacco consumption, excessive use of alcohol, sugar and salt, sedentary lifestyle, etc.) and poor dietary diversity are responsible, individually or together, for several non-communicable diseases [3]. These illnesses, often disabling and requiring expensive treatment, tend to make the patient a burden for the family, loved ones, and society. The transition from adolescence to adulthood is an important period for establishing behavioral patterns that affect long-term health and risk of chronic diseases [4].

Several studies show the links between diet and academic performance. Indeed, inadequate nutrition can lead to weak abilities among learners who, ultimately, will not be able to reach their full potential for their contribution to the development of countries [5] [6] [7] [8] [9].

Medical students are a prime target for promoting healthy lifestyle and eating habits. They are more inclined to make food choices that are harmful to their health [10] [11] [12]. Indeed, they often become entirely responsible for their diet when they enter universities [13].

Thus, this study aimed to describe the lifestyle habits and dietary diversity of medical students at Université Gaston Berger in Saint-Louis.

2. Study Method

2.1. Study Framework

The UGB of Saint-Louis has eight training and research units including that of Health Sciences (UFR 2S). UFR2S, since the 2010/2011 academic year, has been running its Medicine program in accordance with the License-Master-Doctorate (LMD) system and the directives of the West African Health Organization (WAHO). The UFR 2S brings together eight laboratories, six departments and a research center, which employ 38 teaching and research staff (PER) supported by 30 technical and service administrative staff (PATS). In total, 528 students, from different countries, are regularly enrolled in initial Medicine training.

2.2. Type, Period and Study Population

This cross-sectional study with a descriptive aim was carried out from May 23 to June 3, 2023, among medical students at Université Gaston Berger (UGB) in Saint-Louis.

2.3. Selection Criteria

Students regularly registered at UFR 2S and who freely agreed to participate in

the study were included.

Students unavailable during the collection period were not included.

2.4. Sampling

All students meeting the selection criteria were surveyed.

2.5. Collection Procedure

The questionnaire, created for data collection, consisted of three parts. The first two parts (sociodemographic information, lifestyle habits) designed by the research team based on the literature review and the third part (dietary diversity) taken from the guide to measuring dietary diversity [2]. The questionnaire was transcribed into XLM format using the Open Data Kit (ODK) application. The link of the questionnaire was indicated to the students through their WhatsApp discussion platform. They were able to respond using their mobile phones: the collection was done through self-administration of the questionnaire. After completion, the submitted data was saved on the secure ONA server.

2.6. Data Processing and Analysis

The data collected was extracted in the form of an Excel file then cleaned and analyzed using the R software. The description consisted on the one hand of determining the extremes accompanied by the median then the means accompanied by the standard deviations for the quantitative variables. On the other hand, it was a question of determining the absolute and relative frequencies for the qualitative variables.

2.7. Individual Dietary Diversity Score

This score was determined using the FAO guide [2]. This is an approach based on 24-hour recall. The idea is to list 12 food groups (9 groups for women) and ask the respondent whether or not they have consumed a food from these groups. When a food has been consumed, 1 point is assigned to the group to which it belongs. If no food from a group was consumed, 0 is assigned to that group. Dietary diversity thresholds were defined using quartiles of the dietary diversity score. Thus, dietary diversity will be said to be low, medium, high, if respectively its score is less than or equal to the first quartile, between the first and third quartile and finally greater than the third quartile.

2.8. Ethical Considerations

This study was authorized by the Department of Public Health and Social Medicine of the UFR of Health Sciences. Participants were informed of the possibility of refusing to participate in the study without any risk of repercussions. Informed consent was obtained from each participant online through their agreement to complete the questionnaire. The data collected was anonymous and used only by members of the research team. There was no monetary interest in participating in this study.

3. Results

3.1. Sociodemographic Characteristics

Among the 528 expected, 471 participated in the study; representing a participation rate of 89.2%. Boys represented 62.4% of participants. 94.9% of them were single and lived mainly on the University's social campus. Those who resided outside the social campus (16.5%) mainly lived either with family (42.3%) or in shared accommodation (33.3%). The age of the students varied from 18 to 32 years, had a median of 23 years and a mean of 22.4 years with a standard deviation of 2.5 years. The 15 countries of origin were dominated by Senegal (88.7%) and Morocco (3.6%) The results relating to socio-demographic characteristics are presented in Table 1.

Table 1. Sociodemographic information.

Sociodemographic information	Absolutes frequencies (n)	Relatives frequencies (%)
Sex		
Female	117	37.6
Male	294	62.4
Level of study		
Licence 1	98	20.8
Licence 2	90	19.1
Licence 3	72	15.3
Master 1	68	14.4
Master 2	54	11.5
Doctorate 1	49	10.4
Doctorate 2	40	8.5
Country of origin		
Senegal	418	88.7
Morocco	17	3.6
Benin	7	1.5
Islamic Republic of Mauritania	8	1.7
Togo	4	0.8
Ivory Coast	3	0.6
Green cap	3	0.6
Niger	3	0.6
Chad	2	0.4
Burkina Faso	1	0.2
Comoros	1	0.2
Mali	1	0.2
Central African Republic	1	0.2
Democratic Republic of Congo	1	0.2
Tunisia	1	0.2

Continued

Place of residence		
Campus 1	241	51.2
Campus 2	152	32.3
Out of campus	78	16.5
Marital status		
Single	447	94.9
Married	23	4.8
Widower	1	0.2
Pathological ground		
No pathological ground	373	79.1
Asthma	47	10.0
Sickle cell disease	12	2.5
Sinusitis	7	1.5
Myopia	6	1.3
Allergic rhinitis	4	0.8
Hepatitis B	2	0.4
Ovarian Cyst	2	0.4
Other	18	3.5

3.2. Life Habits

Sleep duration varying from 3 to 9 hours per night had a mean of 5.6 hours with a standard deviation of 1.1 hours. The daily number of meals ranged from 1 to 5 with an average of 2.8 ± 0.6. At least one meal was skipped by 65.0% of participants. Breakfast was the most skipped meal (67.2%). Although 62.8% of participants dined between 7 p.m. and 9 p.m., 19.1% did so after 10 p.m.

Daily water consumption ranged from 0.75 to 6 liters, with an average of 2.2 ± 1.1 liters.

Alcohol and tobacco were consumed by 2.5% and 0.6% of participants respectively.

Physical and sporting activity was practiced by 71.5% of participants who did on average 2.2 ± 2.3 sports sessions per week, with an average of 50.9 ± 40.2 minutes per session. The sports practiced were mainly football (43.6%), brisk walking (17.2%) and fitness (10.7%). Table 2 presents all the results concerning lifestyle habits.

3.3. Dietary Diversity

The day before the collection, the men had mainly consumed starchy foods (96.9%). Dark green leafy vegetables 22.0% and organ meats 16.3% were the least consumed food groups. For fruits rich in vitamin A, fish and eggs, respectively 76.6%, 73.2% and 62.4% of men had not consumed them. Table 3 presents the results regarding the food groups consumed by men the day before the survey.

Among women, 96.1% had consumed starchy foods the day before the collec-

tion. For dark green leafy vegetables and offal, 13.5% and 12.4% respectively had consumed them. For fruits rich in vitamin A, eggs, respectively 43.8% and 77.0% of women had not consumed them. Table 4 presents the results about the food groups consumed by women the day before the investigation.

The dietary diversity score was low in 31.9% of men and 28.7% of women (Figure 1).

Table 2. Living habits of students.

Living habits	Absolutes frequencies (n)	Relatives frequencies (%)
Skipping meals		
Yes	306	65.0
No	165	35.0
Skipped meal		
Breakfast	203	2.1
Lunch	74	62.8
Dinner	25	15.1
Breakfast	10	19.1
Dinner time		
Before 7 p.m.	10	2.1
[7 p.m.-9 p.m.[	296	62.8
[9 p.m.-10 p.m.[	71	15.1
10 p.m. and more	90	19.1
Alcohol consumption		
Yes	12	2.5
No	459	97.5
Tobacco consumption		
Yes	3	0.6
No	468	99.4
Sports practice		
Yes	234	71.6
No	93	28.4
Sports practiced		
Soccer	99	42.3
Fast walk	58	17.2
Fitness	36	10.7
Running	33	9.8
Bodybuilding	22	6.5
Swimming	14	4.2
Martial Arts	13	3.9
Basketball	6	1.8
Handball	5	2.1
Horse riding	1	0.3

Table 3. Food groups consumed by men in the last 24 hours n = 295.

Food groups	Yes (%)	No (%)
Cereals	286 (96.9)	9 (3.1)
White tubers	91 (30.8)	204 (69.2)
Vegetables and tubers rich in Vitamin A	111 (37.6)	184 (62.4)
Dark leafy green vegetables	65 (22.0)	230 (78.0)
Other vegetables	195 (66.1)	100 (33.9)
Fruits rich in vitamin A	69 (23.4)	226 (76.6)
Other fruits	71 (24.1)	224 (75.9)
Organ meats	48 (16.3)	247 (83.7)
Meat	151 (51.2)	144 (48.8)
Eggs	111 (37.6)	184 (62.4)
Fish	79 (26.8)	216 (73.2)
Legumes, nuts and seeds	85 (28.8)	210 (71.2)
Milk and dairy products	187 (63.4)	108 (36.6)
Oils, fats, and palm oil	197 (66.8)	98 (33.2)

Table 4. Food groups consumed by women in the last 24 hours n = 178.

Food groups	Yes (%)	No (%)
Starchy foods	171 (96.1)	7 (3.9)
Dark green leafy vegetables	24 (13.5)	154 (86.5)
Fruits and other vegetables rich in vitamin A	100 (56.2)	78 (43.8)
Other fruits and vegetables	123 (69.1)	55 (30.9)
Organ meats	22 (12.4)	156 (87.6)
Meat and fish	101 (56.7)	77 (43.3)
Eggs	67 (37.6)	111 (62.4)
Legumes, nuts and seeds	41 (23.0)	137 (77.0)
Milk and dairy products	113 (63.5)	65 (36.5)

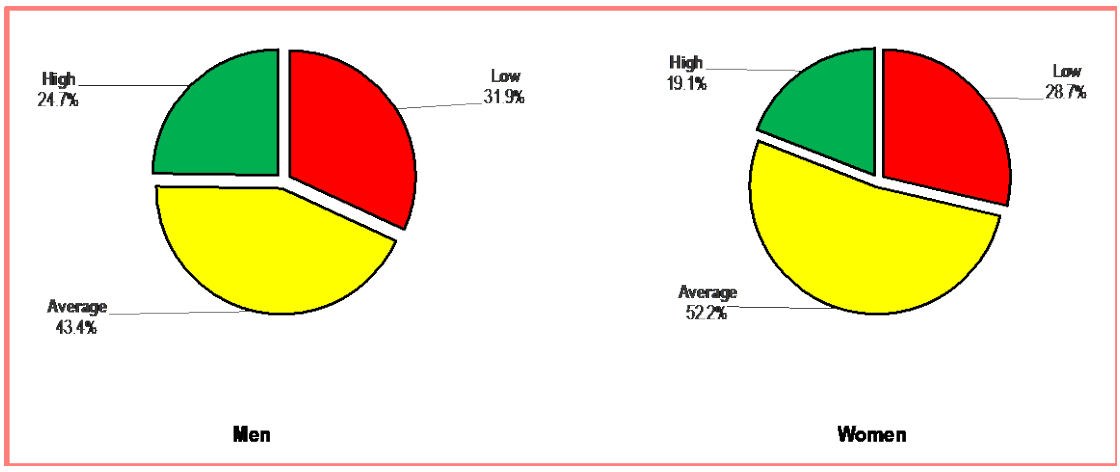

Figure 1. Distribution of men and women according to dietary diversity score.

4. Discussion

The participation rate was 89.2%. It is higher than the participation rates observed in several studies such as the 50% recorded in the work of Thiel *et al.*, in 2023 in France [14] but remains lower than those recorded in other studies such as that of Kamgain in 2021 in Mali which recorded 100% participation [15].

On average, the students who participated in this study were 22.4 ± 2.5 years old. This result, although lower than the results found by Sawadogo *et al.*, in 2022 in Burkina Faso (25.71 years ± 3.57) [16] remains high compared to that reported by Karroumi in 2015 in Morocco (21.23 years ± 2. 04 years) [10]. However, by taking into account the deviations, the said results are superimposable. In this study, the predominance was male (M/F sex ratio = 1.7). This observation was made by Koba-anani in Mali in 2022 (M/F sex ratio = 1.16). However, authors in Nigeria [17] and Morocco [10] have described contrary situations. Indeed, the sex ratio was in favor of women in their studies.

Among the pathological conditions reported, asthma was observed in 47 people (10.0%). This figure reflects the extent of the disease in the country. Indeed, although the prevalence rate of asthma is not known, we find in fragmented studies a rate of around 9.1% at the national level [18].

Participants consumed an average of 2.8 ± 0.6 meals. They mostly skipped breakfast. This can be explained by the fact that most of them have to go to the hospital early for the internship. This habit is considered harmful to health according to some authors given the importance of this first meal of the day [19]. Furthermore, 34.2% of these participants eat dinner after 9 p.m. This habit is also criticized by nutrition professionals because it can negatively affect the metabolic and circadian rhythms necessary for optimal health [20].

The participants' sleep duration was 5.6 ± 1.1 hours. The National Sleep Foundation's recommended sleep duration for young adults is between 7 and 9 hours [21]. Although the participants' observed sleep time may impact their well-being in a negative way, it can be explained by the workload of medical training.

The consumption of alcohol (2.5%) and tobacco (0.6%) in this study was low compared to the work of Moustahfid in 2022 [22] and Omage *et al.*, in 2017 [16]. In fact, these authors had respectively estimated a rate of 14.9% and 30.5% for alcohol then 4.7% and 5% for tobacco. In 2007, a publication entitled "Alcohol and cancer risks" from the National Cancer Institute of France demonstrated with convincing evidence the link between alcohol consumption and the occurrence of cancers of the upper aero-digestive tracts [23]. This link is increased if alcohol consumption is associated with tobacco consumption [24].

Physical and sporting activity was practiced by 71.5% of participants. This result is comparable to that observed among medical students in France (71.3%) [25]. These rates are much higher than those observed among medical students in Bamako, *i.e.* 49.2% [26]. Gaston Berger University has a framework and a system that facilitates the practice of several sports. Indeed, it has a Training and

Research Unit in Educational Sciences, Training and Sport which has Olympic level spaces within it.

The dietary diversity score was low in 31.9% of men and 2.8% of women. This score was low in 34.7% of participants in India. However, in this latest study, people with a high dietary diversity score were 28.5% which is higher than the 2.4.7% of men and 19.1% of women in this study. This contrast is explained by the fact that the average dietary diversity score was higher in our study (43.4% in men and 52.2% in women) than in the other (36.8%). A high dietary diversity score among 49% of students in southern Nigeria was reported in 2018 [3].

The sensitivity of certain questions relating to lifestyle habits (such as alcohol consumption) in a context where culture or religious beliefs identify these items as "taboo" establishes a reasonable doubt in relation to certain information obtained. Ensuring confidentiality was the means used to put participants at ease. Furthermore, the assessment of dietary diversity in this study did not take into account the quantity of foods consumed.

5. Conclusions

Although for each lifestyle habit the study revealed good habits, it must be emphasized that some are fraught with risks for the health of students.

Dietary diversity is high among few students and certain food groups are very poorly represented. Given the impact of diet on life and well-being, awareness sessions or the effective introduction of nutrition modules in the training curriculum for doctors would be a relevant recommendation.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

References

[1] Castelein, P. (2016) Chapitre 29. La mesure de la qualité de l'environnement. In: Trouvé, E., Éd., *Agir sur l'environnement pour permettre les activités*, De Boeck Supérieur, Louvain-la-Neuve, 441-455. https://doi.org/10.3917/dbu.trouv.2016.01.0441

[2] Kennedy, G., Ballard, T., Dop, M.C. and Nutrition and Consumer Protection Division (2010) Guide to Measuring Dietary Diversity at the Household and Individual Level. Food and Agriculture Organization of the United Nations.

[3] Omage, K. and Omuemu, V.O. (2001) Assessment of Dietary Pattern and Nutritional Status of Undergraduate Students in a Private University in Southern Nigeria. *Food Science & Nutrition*, **6**, 1890-1897. https://doi.org/10.1002/fsn3.759

[4] Meg, L., Small, N.M., Bailey-Davis, L. and Maggs , J.L. (2012) The Protective Effects of Parent-Student Communication on Eating and Physical Activity Behaviors. *Journal of Adolescent Health*, **53**, 300-302. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3793255/ https://doi.org/10.1016/j.jadohealth.2013.03.010

[5] Critch, J.N. (2020) School Nutrition: Supporting the Provision of Healthy Foods

and Drinks. *Paediatrics & Child Health*, **25**, 39-46. https://doi.org/10.1093/pch/pxz101

[6] Northstone, K., Joinson, C., Emmett, P., Ness, A. and Paus, T. (2012) Are Dietary Patterns in Childhood Associated with IQ at 8 Years of Age? Population-Based cohort Study. *Journal of Epidemiology & Community Health*, **66**, 624-628. https://doi.org/10.1136/jech.2010.111955

[7] Overby, N.C., Lüdemann, E.V.A. and Hoigaard, R. (2013) Self-Reported Learning Difficulties and Dietary Intake in Norwegian Adolescents. *Scandinavian Journal of Public Health*, **41**, 754-760. https://doi.org/10.1177/1403494813487449

[8] Correa-Burrows, P., Burrows, R., Orellana, Y. and Ivanovic, D. (2015) The Relationship between Unhealthy Snacking at School and Academic Outcomes: A Population Study in Chilean Schoolchildren. *Public Health Nutrition*, **18**, 2022-2030. https://doi.org/10.1017/S1368980014002602

[9] Florence, M.D., Asbridge, M. and Veugelers, P.J. (2008) Diet Quality and Academic Performance. *Journal of School Health*, **78**, 209-215. https://doi.org/10.1111/j.1746-1561.2008.00288.x

[10] Karroumi, S. (2015) Paramètres anthropométriques et habitudes alimentaires chez les étudiants de médecine. Master's Thesis, Université Cadi Ayyad, Marrakech.

[11] Rubina, A., Shoukat, S., Raza, R., Shiekh, M.M., Rashid, Q., Siddique, M.S., Panju, S., Raza, H., Chaudhry, S. and Kadir, M. (2014) Knowledge and Practice of Healthy Lifestyle and Dietary Habits in Medical and Non-Medical. *Journal of Nutrition Education and Behavior*, **46**, 390-395.

[12] Ganasegeran, K., Al-Dubai1, S.A., Qureshi, A.M., Al-abed, A.A., Rizal A.M. and Aljunid S.M. (2012) Social and Psychological Factors Affecting Habit Eating among University Students in a Malaysian Medical School: A Cross-Sectional Study. *Nutrition Journal*, **11**, Article No. 48. https://doi.org/10.1186/1475-2891-11-48

[13] Satia, J.A., Galanko, J.A. and Siega-Riz, A.M. (2004) Eating at Fast Food Restaurants Is Associated with Dietary Intake, Demographic, Psycho-Social and Behavioral Factors among African Americans in North Carolina. *Public Health Nutrition*, **7**, 1089-1096. https://doi.org/10.1079/PHN2004662

[14] Thiel, A., Goetz, C., Kanny, G. and Danan, J. (2023) Health Status of First-Year Undergraduate Nursing Students: Descriptive Study. *Revue Francophone Internationale de Recherche Infirmière*, **9**, Article ID: 100294. https://doi.org/10.1016/j.refiri.2023.100294

[15] Kamdem Kamgain, A.B. (2021) Etude des connaissances des étudiants de la Faculté de Médecine et d'odonto-stomatologie de Bamako sur l'hépatite B. Master's Thesis, Université des Sciences, Techniques et Technologies de Bamako, Mali.

[16] Sawadogo, P.M., Lankoande, L., Dahourou, D.L. and Drabo, K.M. (2022) Viral Hepatitis B in Healthcare Settings: Factors Associated with Vaccination among Health Professional Students at the National School of Public Health of Ouagadougou, Burkina Faso. *The Pan African Medical Journal*, **42**, 227.

[17] Niang, S., Dieye, A., Dia, A.D., Dia, Y., Diatta, A. and Toure, N.O. (2020) Epidemiological, Clinical, Spirometric and Therapeutic Profile of Asthmatic Patients Seen in Consultation at the Pulmonology Department of CHR SL. *Revue des Maladies Respiratoires Actualités*, **12**, 86. https://doi.org/10.1016/j.rmra.2019.11.169

[18] Lecerf, J., Cayzeele, A. and Bal, S. (2011) Breakfast, Is It Useful? *Cahiers de Nutrition et de Diététique*, **46**, 30-39. https://doi.org/10.1016/j.cnd.2010.10.001

[19] Gallant, A., Lundgren, J. and Drapeau, V. (2014) Nutritional Aspects of Late Eating and Night Eating. *Current Obesity Reports*, **3**, 101-107.

https://doi.org/10.1007/s13679-013-0081-8

[20] Hirshkowitz, M., Whiton, K., Albert, S.M., Alessi, C., Bruni, O., DonCarlos, L., Hazen, N., Herman, J., Adams Hillard, P.J., Katz, E.S., Kheirandish-Gozal, L., Neubauer, D.N., O'Donnell, A.E., Ohayon, M., Peever, J., Rawding, R., Sachdeva, R.C., Setters, B., Vitiello, M.V. and Ware, J.C. (2015) National Sleep Foundation's Updated Sleep Duration Recommendations: Final Report. *Sleep Health*, **1**, 233-243. https://doi.org/10.1016/j.sleh.2015.10.004

[21] Mustahfid, N. (2022) The Prevalence and Characteristics of Depressive and Anxiety Disorders among Students of the Faculty of Medicine and Pharmacy of Agadir. Master's Thesis, University of Agadir, Agadir.

[22] Shlienger, J.L. and Halimi, S. (2011) Nutrition clinique pratique: Practical clinical nutrition. *Médecine des Maladies Métaboliques*, **5**, 223. https://doi.org/10.1016/S1957-2557(11)70228-0

[23] Zeka, A., Gore, R. and Kriebel, D. (2003) Effects of Alcohol and Tobacco on Aerodigestive Cancer Risks: A Meta-Regression Analysis. *Cancer Causes Control*, **14**, 897-906 https://doi.org/10.1023/B:CACO.0000003854.34221.a8

[24] Bakir, K., Edouard, P. and Laval, B. (2023) Le sport pendant le troisième cycle des études médicales de médecine générale: Étude transversale par questionnaire en ligne. *Journal de Traumatologie du Sport*, **40**, 113-119. https://doi.org/10.1016/j.jts.2023.02.001

[25] Darré , T., Saka, B., Walla, A., *et al.* (2018) Sexuality, Sexually Transmitted Infections and Contraception among Health Sciences Students in University of Lomé, Togo. *BMC Research Notes*, **11**, Article No. 808. https://doi.org/10.1186/s13104-018-3923-3

[26] Koba-Anani, K.S. (2018) Facteurs associés à l'obésité chez les étudiants des facultés de Médecine-Odontostomatologie et de pharmacie du Point G, au Mali en 2021. Master's Thesis, Université des Sciences, Techniques et Technologies de Bamako, Mali.