



## Gastrointestinal Pathologies Recorded at the Felix Houphouët-boigny University Community Health Center from 2013 to 2017 (Abidjan - Ivory Coast)

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### Authors' contributions

This work was carried out in collaboration among all authors. Authors NJN, KD, DMC and SM designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Author ONNAN managed the analyses of the study. Author AAJL made the map. Author AACA translated the article into English. Author NJN managed the literature searches.

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### ABSTRACT

**Background:** Gastrointestinal pathologies constitute a significant public health problem for the Ivory Coast, particularly for populations living under conditions of poor hygiene.

**Aims:** The purpose of this study is to evaluate the prevalence of gastrointestinal pathologies within the student body attending the Felix Houphouët-Boigny University Community Health Center.

**Place and Duration of Study:** The study was conducted in the university center of the university Felix Houphouët-Boigny de Cocody to the south of the Ivory Coast between January to February 2018.

**Methodology:** It consisted of a documentary investigation which was carried out by consulting the medical files of the patients.

**Results:** The results revealed that gastrointestinal pathologies constituted the third principal cause of affection in the students with 16% of the consultations. This study permitted to evaluate the level of prevalence of gastrointestinal pathologies of 2013 to 2017.

**Conclusion:** From this study, it was concluded that gastrointestinal pathology was a health problem for this student population.

*Keywords: Gastrointestinal; hand; hygiene; university; Ivory Coast.*

## 1. INTRODUCTION

Gastrointestinal diseases are diseases caused by digestive germs, widespread in the world, especially in sub-Saharan Africa. They represent a major public health problem, especially in environments where hygiene conditions are precarious [1]. The organization of several forums on Water, Hygiene and Sanitation (WASH) (Marrakech in 1997, Hays in 2000, Kyoto in 2003, Mexico in 2006 and Senegal in 2012) testifies to the extent of this problem in developing countries. According to the recent report of the WHO / UNICEF Joint Program on Water, Sanitation and Hygiene (WASH) [2,3,4], it is estimated that more than 2.5 billion people worldwide 550 million in sub-Saharan Africa who do not have minimum hygiene conditions [4]. The risks to human health are undoubtedly the most serious and widespread problem. Every year, about 3.5 million people die of gastrointestinal diseases, particularly in developing countries [5,6]. The health of a population is closely linked to the quality of sanitation and hygiene services [7].

In developing countries, poor hygiene and lack of basic sanitation are the basis of many gastrointestinal diseases, especially [2,4,8,9,10]. Are the latter the same causes of absenteeism at school and at work, and therefore of low educational attainment and significant economic and income losses at the level of a developing country [2,11,12]. Indeed, the physical environment and the degree of cleanliness of training structures have implications for the health and well-being of learners. In the case where this environment does not have sanitation and acceptable hygiene conditions such as washing hands and toilets in good condition, diseases develop and spread quickly. It becomes a high-risk space for its last by increasing their vulnerability to diseases especially gastrointestinal [13]. Faced with the low level of

hygiene recorded among students at the University Felix Houphouët-Boigny [14], it seemed appropriate to evaluate the various pathologies, especially those gastrointestinal. More precisely, we had:

- Listed the main pathologies encountered by students attending the regional center of Abidjan 1 University works;
- Determined the prevalence of gastrointestinal pathologies in the regional center of Abidjan 1 University works;
- Compared the prevalence of these gastrointestinal pathologies with other pathologies recorded in the Regional Center of University works of Abidjan 1.

## 2. MATERIALS AND METHODS

### 2.1 Zone of Study

The study was conducted at the regional health center of Abidjan 1 university works of the University Felix Houphouët-Boigny Cocody in the district of Abidjan (Fig. 1).

It is a community-based health facility. It is located between latitude 5°20 and 5°38 N and longitude 3°58 and 3°59 W.

### 2.2 Characteristic of the Study

This is a documentary survey carried out in the regional health center of Abidjan 1 University works by consulting medical records and patient registers. It concerned the medical files and the registers from 2013 to 2017, consulted during the period from January to February 2018. Authorization for their consultations was requested and obtained from the University authorities and the officials of the regional center of university works. The pathologies most frequently encountered during the past five (05) years have been analyzed and interpreted.

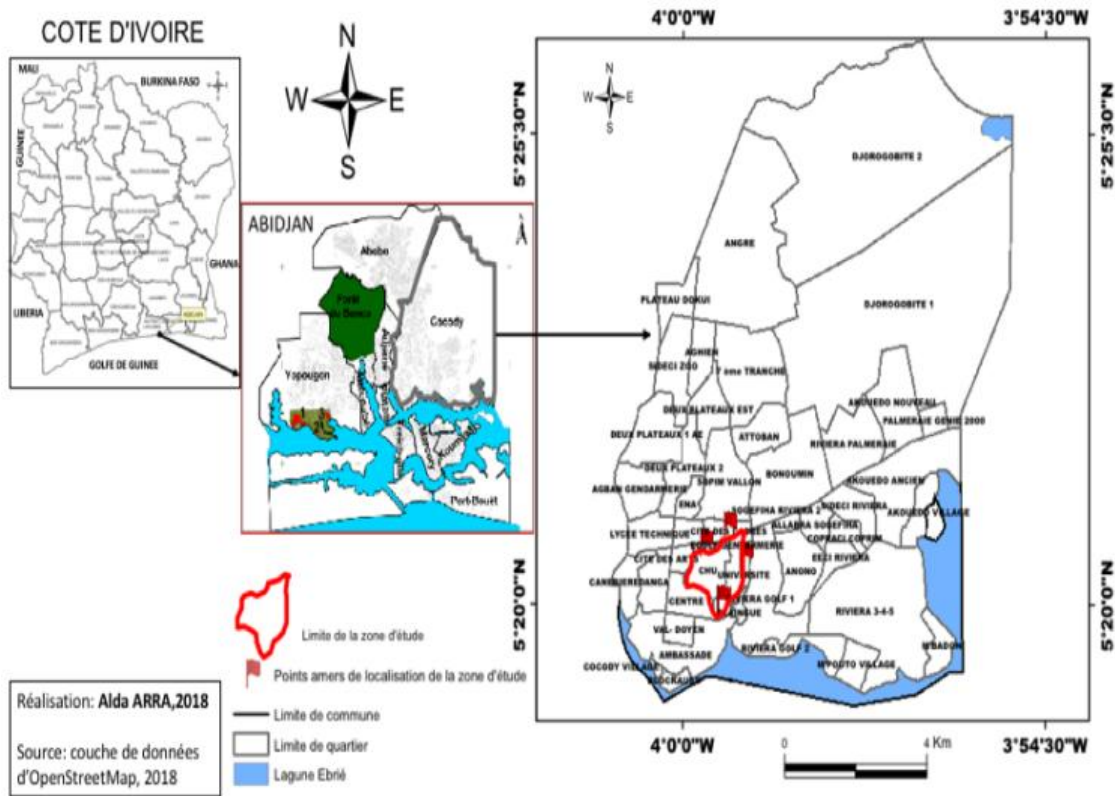


Fig. 1. Study area

## 2.3 Exploitation and Analysis of Data

The data entry was done with the Excel software. The KHI-DEUX ( $\chi^2$ ) test was used to compare the prevalence values between the different pathologies. Interpretations are based on the value of p and in a 95% confidence interval (CI). The digital map of the locality was produced with Arc GIS software.

## 3. RESULTS AND DISCUSSION

### 3.1 Results

#### 3.1.1 Inventory of the main pathologies encountered

The data provided by the various medical files and patient registers consulted in the regional health center of the University works revealed that the majority of patients were students (88.44%). Fig. 2 presents the main pathologies recorded in order of importance among students from 2013 to 2017.

These include malaria, respiratory diseases, gastrointestinal diseases, dermatosis,

gynecological pathologies and sexually transmitted infections (STIs).

The evolution of these main pathologies shows that the most widespread pathology in the University environment is malaria followed by respiratory diseases and gastrointestinal pathologies (Fig. 3). This last pathology was the third leading cause of patient consultation in this University Health Center with 12.70% of total consultations from 2013 to 2017 ( $p=0.0003$ ).

#### 3.1.2 Prevalence of gastrointestinal pathologies

The prevalence of gastrointestinal pathologies were 4.81% [0.01 – 0.11] in 2013, second 10.04% [0.05 – 0.17] in 2014, then 7.13% [0.03 – 0.14] in 2015 before decreasing by 14.96% [0.09 – 0.23] and 16.09% [0.10 – 0.24] respectively in 2016 and 2017. The prevalence of gastrointestinal pathologies in patients at the University Health Center ranged from 4.81 to 16.09% from 2013 to 2017. A statistically significant difference between the 2013 and 2017 prevalence was noted ( $p=0.0397$ ).

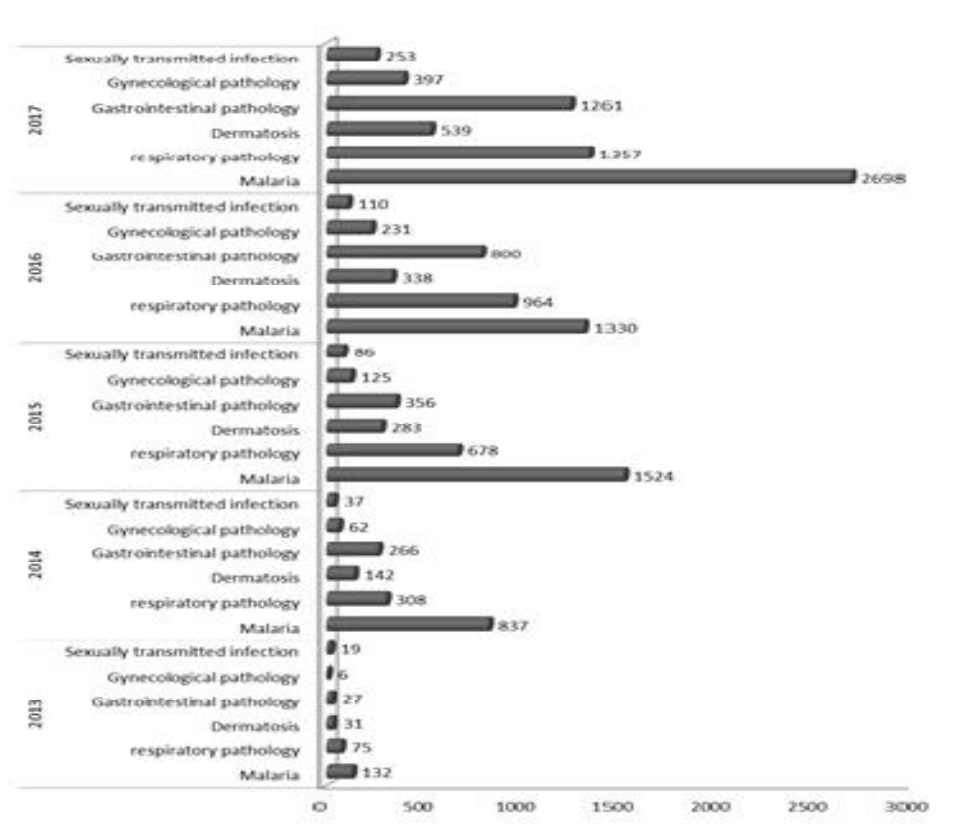


Fig. 2. Main pathologies encountered from 2013 – 2017

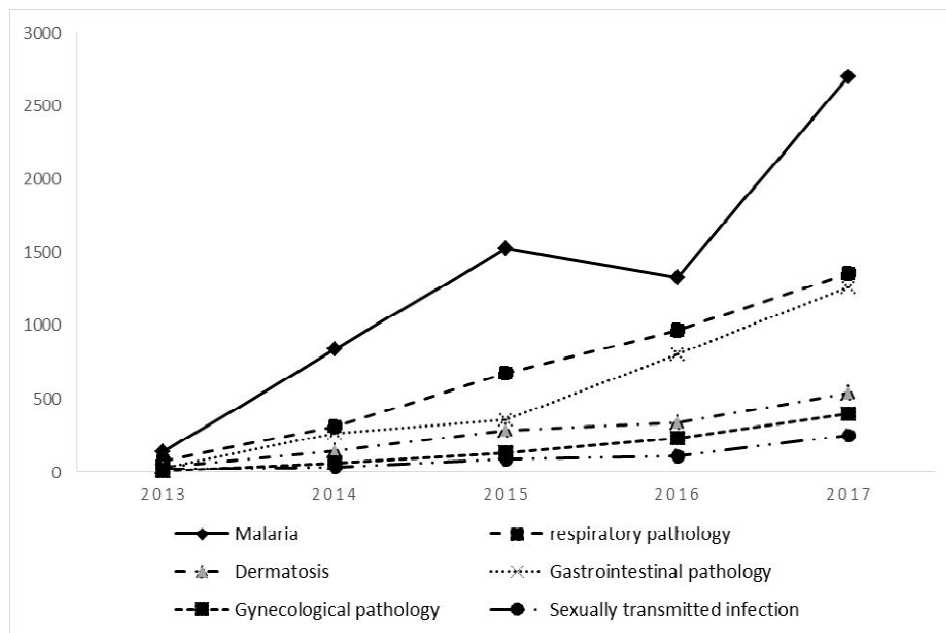


Fig. 3. Curves of the evolution of main pathologies recorded among students from 2013 to 2017

**Table 1. Prevalence of the main pathologies encountered at the university community health center**

Years	Pathologies					
	Mal	Resp	Gastro	Dermatosis	Gyneco	STIs
	<b>Prevalences [IC95%]</b>					
2013	23,56 [0.20 0.27]	13,36 [0.10 0.16]	4,81 [0.03 0.06]	5,52 [0.03 0.07]	1,06 [0.00 0.02]	3,38 [0.02 0.05]
2014	31,60 [0.29 0.33]	11,63 [0.10 0.12]	10,04 [0.08 0.11]	5,36 [0.04 0.06]	2,34 [0.01 0.02]	1,39 [0.00 0.01]
2015	30,52 [0.29 0.31]	13,58 [0.12 0.14]	7,13 [0.06 0.07]	5,56 [0.05 0.06]	2,50 [0.02 0.037]	1,72 [0.00 0.01]
2016	24,88 [0.23 0.26]	18,08 [0.17 0.19]	14,96 [0.14 0.15]	6,32 [0.05 0.07]	4,32 [0.04 0.05]	2,05 [0.01 0.02]
2017	17,32 [0.33 0.35]	17,32 [0.16 0.18]	16,09 [0.15 0.16]	6,88 [0.06 0.07]	5,06 [0.04 0.05]	3,22 [0.02 0.03]

*Mal = Malaria, Resp = Respiratory pathology, Gastro = Gastrointestinal pathology, Gyneco = Gynecology pathology, STIs = sexually transmitted infections*

**3.1.3 Comparison of gastrointestinal pathology to other pathologies**

Table 1 presents the prevalences of various major pathologies. We note in the first place malaria with prevalences ranging from 17.32% to 31.60%. Gastrointestinal pathologies rank third with prevalence's ranging from 4.81 to 16.09. They show the importance of their prevalence especially during the year 2017 with 16.09% where they reach their optimum. In 2017, the observed prevalences for malaria, respiratory diseases and gastrointestinal diseases were not statistically different (p = 0.97).

It has been observed a high number of consultations due to gastrointestinal infections which rank third in terms of pathology recorded in students. It demonstrates that enteric diseases are a public health problem for students at the University Felix Houphouet-Boigny.

**3.2 Discussion**

This study showed that students attending the social health center are infected with three (03) main pathologies, mainly malaria, respiratory diseases and gastrointestinal diseases. The latter, that is to say, gastrointestinal diseases constitute 16% of consultations [15]. It is a public health problem for students. These results corroborate that of Rindra and collaborators, who also demonstrated that gastrointestinal pathologies are a public health problem but more pronounced in children 0 to 5 years of age [1]. Indeed, these gastrointestinal diseases are of viral, bacterial, or parasitic origin with 50 to 60% of bacterial agents. It should be noted that these

conditions are a reflection of poor hygiene and sanitation [16,17]. This finding was recorded by N'gbesso and collaborators in a survey conducted at this university [14]. They found that there was a lack of hygiene and inadequate sanitation in the student population and that all of these might pose an increased risk of transmission of enteric pathogens in this population. This possibility of transmission of pathogens would be more pronounced because of the high number of individuals in this population [16]. Studies have shown that most enteric pathogens are transmitted by the fecal-oral way. This is facilitated by the close contact of people either by direct or indirect transmission through the environment [18,19,20,21]. However, the provision of hygiene and sanitation facilities could reduce these gastrointestinal diseases by up to 90% [22,23,24]. Several studies have shown that the simple means of prevention against enteric diseases is an appropriate hygiene and sanitation conditions [25,26,27]. Indeed, the establishment of appropriate sanitation and hygiene device ensures a safe evacuation of human residues and prevents contact with other potential sources host receptor which is a primary barrier to preventing enteric transmission [28,29,30]. The human environment has long been considered as a factor that may have an impact on the occurrence of enteric diseases among which we can mention the conditions of hygiene. This has a direct effect on the risk of onset or not of enteric diseases [31,32]. A study conducted in Brazil showed the impact of the implementation of a large measure of sanitation: before the intervention, the risk of pathologies attributable to poor sanitation and infrastructure was 53%, this risk became 18%

after the intervention [33]. Access to water, hygiene and sanitation (WASH) is fundamental to health. It plays a critical role in the prevention and management of especially enteric diseases. It is one of five recommended public health interventions for the control of neglected tropical diseases [4,34,35,36].

#### 4. CONCLUSION

This study showed that gastrointestinal pathologies are a public health problem for this student population. It constitutes more than 16% of the consultation rate of this health center. Hygiene programs are underway to sensitize this student population to have hygienic behaviors in order to reduce this gastrointestinal pathologies. Additional work, in particular on the identification of pathogens, should be undertaken to investigate the etiology of these gastrointestinal conditions.

#### CONSENT

It is not applicable.

#### ETHICAL APPROVAL

It is not applicable.

#### COMPETING INTERESTS

Authors have declared that no competing interests exist.

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