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Panorama of Internal Diseases Diagnosed in the Department of Internal Medicine at the University Hospital Center of the Point G: A Hospital Registry-Based Study

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Abstract **Original Research Article**

Introduction: Internal diseases referred to the problems in the body's internal organs and tissues that it is complex or multisystem diseases processes, undifferentiated diseases processes, and single-organ disease processes, and that may be prevented, diagnosed and treated in internal diseases department, otherwise known as internal medicine department. Describing all internal diseases would contribute to identify the diseases likely to lead to increased hospital morbidity and mortality, in order to redirect priority health actions by health authorities. The objective of this work was to update our data on the frequency of all internal diseases diagnosed in patients hospitalized in the internal medicine department at the University Hospital Center of the Point G. ***Methodology:*** This was a descriptive study with retrospective data collection of patients with at least an internal disease hospitalized in the internal medicine department at the University Hospital Center of the Point G a study period from January 01, 2016 to December 31, 2016, i.e. 12 months. ***Results:*** During the study period, 383 patients were hospitalized in the internal medicine department at the University Hospital Center of the Point G. The mean age of patients was 49.31 years. The male to female sex ratio was 0.90. There was no statistically significant relationship between sex distribution and age group (p= 0.230). Fever motivated hospitalization in 21.15% of cases (n= 81), followed by anemic syndrome in 8.35% of cases (n= 32). Concerning discharge diagnosis, infectious and parasitic diseases accounted for 21.93% of cases (n= 84), followed by endocrine, nutritional or metabolic diseases with 18.38% of cases (n= 70), and digestive diseases with 15.40% of cases (n= 59). Among infectious and parasitic diseases, opportunistic infections associated with HIV infection were found in 45.23% of cases (n= 38), followed by septicemia with 9.52% of cases (n= 8), and severe malaria with 5.95% (n= 5). Among endocrine, nutritional or metabolic diseases, unbalanced/decompensated type 2 diabetes was found in 52.85% of cases (n= 37), followed by foot wounds in type 2 diabetic patients with 17.14% (n= 12). Concerning hematological diseases, hematological malignancies were found in 56.25% (n= 18), dominated by chronic myeloid leukemia (n= 4), followed by acute leukemia and non-Hodgkin malignant lymphoma (n= 3 cases each). Among digestive diseases, hepatic cirrhosis accounted for 38.98% of cases (n= 23), followed by hepatocellular carcinoma with 22.03% of cases (n= 13). Thrombophlebitis of the lower limb was the most common cardiovascular diseases, accounting for 30.77% of cases (n= 4). Among neurological and psychiatric diseases, ischemic stroke accounted for 47.62% of cases (n= 10), followed by brain tumor with 14.62% of cases (n= 3). Concerning renal diseases, Nephropathies specified or not complicated with renal insufficiency was found in 50% of cases (n= 4). Among rheumatological diseases, systemic lupus erythematosus accounted for 33.33% of

cases, followed by herniated discs with 25.00% of cases. Pulmonary tuberculosis without HIV infection association, multifocal tuberculosis without HIV infection association and Lung cancer were the three main respiratory diseases. ***Conclusion*:** Our study revealed that internal diseases are frequently diagnosed in young adults, preferably women. Infectious and parasitic diseases, endocrine, nutritional and metabolic diseases and digestive diseases appear to be the clinical situations most frequently encountered in internal medicine. Health authorities must take priority action to reduce hospital morbidity and mortality associated with these internal diseases.
Keywords: Internal diseases, internal medicine, Bamako, Mali.

INTRODUCTION

Internal diseases refer to the problems in the body's internal organs and tissues [1] that it is complex or multisystem diseases processes, undifferentiated diseases processes, and single-organ disease processes, and that may be prevented, diagnosed and treated in internal diseases department, otherwise known as internal medicine department. Example of the internal diseases, abdominal pain, anxiety, COPD, depression, dermatitis, Allergic diseases, diabetes, thyroid diseases, cardiovascular diseases, rheumatic Diseases, blood diseases, cancers, kidney diseases [2, 3]. Internal medicine specialists are specialized physicians trained to manage complex or multisystem disease conditions that single-organ specialists may not be equipped to handle. [3]. They may manage serious acute illnesses that affect multiple organ systems concurrently within a single patient, as well as the management of multiple chronic diseases in a single patient [3]. They are focusing on the prevention, diagnosis, and treatment of internal diseases.

Describing all internal diseases would contribute to identify the diseases likely to lead to increased hospital morbidity and mortality, in order to redirect priority health actions by health authorities.

In Africa, the epidemiology of these internal diseases in internal medicine has been described, showing a disparate distribution [4-8]. In Mali, in the internal medicine department, three studies have addressed this issue [9-11]. The objective of this work was to update our data on the frequency of all internal diseases diagnosed in patients hospitalized in the internal medicine department at the University Hospital Center of the Point G by describing the epidemiological aspects.

METHODOLOGY

This was a descriptive study with retrospective data collection of patients with at least an internal disease hospitalized in the internal medicine department at the University Hospital Center of the Point G a study period from January 01, 2016 to December 31, 2016, i.e. 12 months. This was an exhaustive sampling of all hospitalized cases during the study period. We included in this study all patients with at least an internal disease hospitalized during the study period. Patients hospitalized in other departments of the University Hospital Center of the Point G, patients seen in outpatient clinics, patients with surgical diseases and patients hospitalized outside the study period were not included. The diagnosis of these pathologies was established on the basis of clinical and paraclinical data and/or validated diagnostic criteria, depending on the type of pathology. Data were collected from the hospitalization register, including sociodemographic, clinical and evolutionary data. Data entry and analysis were performed using SPSS version 22 software. Quantitative data were presented as mean and standard deviation, while qualitative data were expressed as number and percentage. Pearson's Chi2, Fisher's, Yates and Student's statistical tests with a significance level of $p < 0.05$ were used as appropriate. The variables analyzed were age, sex, reason for hospitalization, and discharge diagnosis. The register was used in strict compliance with confidentiality, and was returned and filed in the archive room immediately after use, with the authorization of the University Hospital Center of the Point G's Director.

RESULTS

During the study period (January 01, 2016 to December 31, 2016), 383 patients were hospitalized in the internal medicine department at the University Hospital Center of the Point G. The 55 - 64 age group was the most represented, accounting for 20.10% of cases (n= 77). The mean age of patients was 49.31 years, with an extreme range of [10 - 95 years]. Of the 383 patients included in the study, 52.48% were female (n= 201), with a sex ratio of 0.90. It emerges from the analysis of figure 1that there was no statistically significant relationship between sex distribution and age group (p= 0.230). Male were predominantly found in the 55 - 64 age group, with 11.23% of cases (n= 43) versus 08.88% of female (n= 34) (p= 0.125) (figure 1). Fever motivated hospitalization in 21.15% of cases (n= 81), followed by anemic syndrome in 8.35% of cases (n= 32), asthenia and/or weight loss and/or anorexia in 7.31% of cases (n= 28) (table 1). Infectious and parasitic diseases accounted for 21.93% of cases (n= 84), followed by endocrine, nutritional or metabolic diseases with 18.38% of cases (n= 70), and digestive diseases with 15.40% of cases (n= 59) (table 2). Among infectious and parasitic diseases, opportunistic infections associated with HIV infection were found in 45.23% of cases (n= 38), followed by septicemia with 9.52% of cases (n= 8), and severe malaria with 5.95% (n= 5) (table 3). Among endocrine, nutritional or metabolic diseases, unbalanced/decompensated type 2 diabetes was found in 52.85% of cases (n= 37), followed by foot wounds in

type 2 diabetic patients with 17.14% (n= 12) (table 4). Concerning hematological diseases, hematological malignancies were found in 56.25% (n= 18), dominated by chronic myeloid leukemia (n= 4), followed by acute leukemia and non-Hodgkin malignant lymphoma (n= 3 cases each) (table 5). Among digestive diseases, hepatic cirrhosis accounted for 38.98% of cases (n= 23), followed by hepatocellular carcinoma with 22.03% of cases (n= 13) (table 6). Thrombophlebitis of the lower limb was the most common cardiovascular diseases, accounting for 30.77% of cases (n= 4) (table 7). Among neurological and psychiatric diseases, ischemic stroke accounted for 47.62% of cases (n= 10), followed by brain tumor with 14.62% of cases (n= 3) (table 8). Concerning renal diseases, Nephropathies specified or not complicated with renal insufficiency was found in 50% of cases (n= 4) (table 9). Among rheumatological diseases, systemic lupus erythematosus accounted for 33.33% of cases, followed by herniated discs with 25.00% of cases (table 10). Pulmonary tuberculosis without HIV infection association, multifocal tuberculosis without HIV infection association and Lung cancer were the three main respiratory diseases, represented respectively 30.77% of cases (n= 4) and 15.38% of cases (n= 2) each for last two conditions (Table 11).

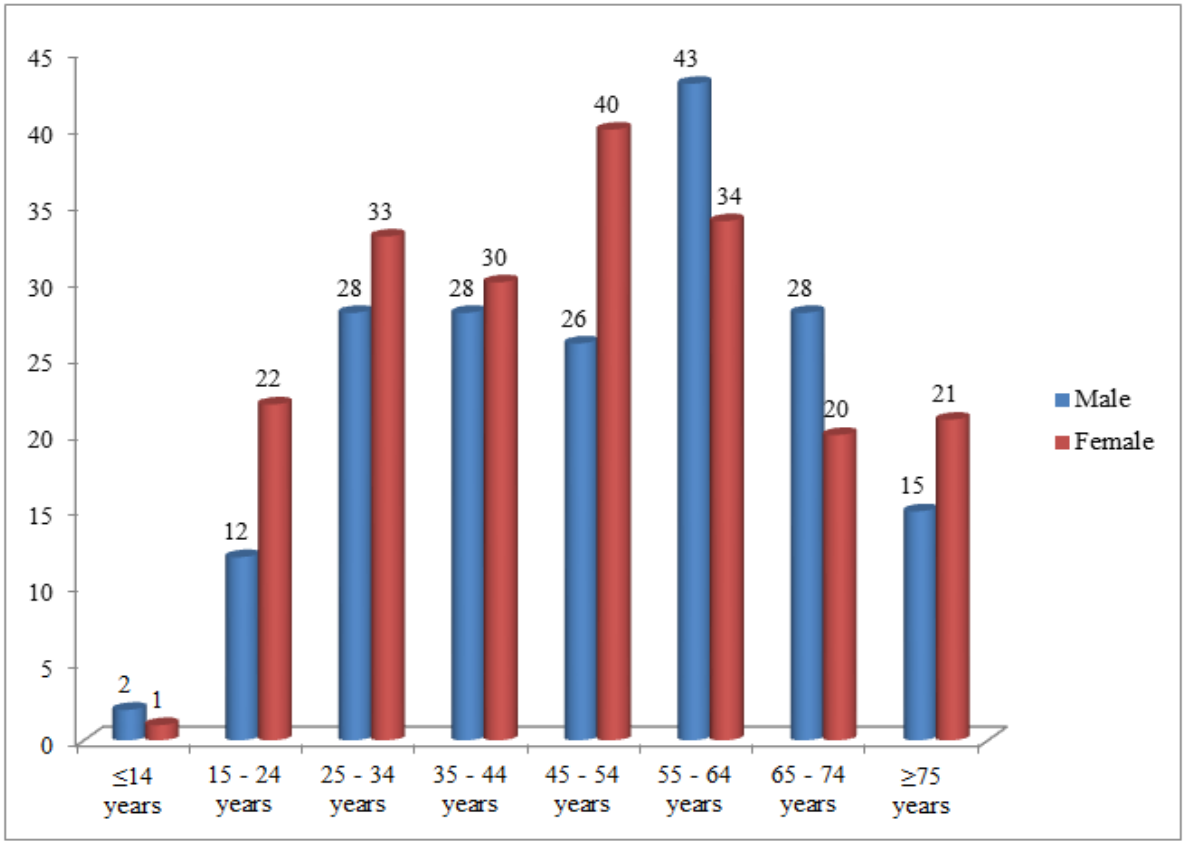

Figure 1: Distribution of patients according to the sex and age group

Table 1: Distribution of patients according to the reason for hospitalization

Reason for hospitalization	Number	Percentage
Fever	**81**	**21.15**
Anemic syndrome	32	8.35
Asthenia and/or Weight loss and/or Anorexia	28	7.31
Abdominal distension and/or ower limb edema	20	5.22
Abdominal pain	17	4.44
No information	13	3.39
Cough	8	2.09
Hemorrhagic syndrome	9	2.34
Cough + Dyspnea + Chest pain	4	1.04
Dyspnea	2	0.52
Chest pain	2	0.52
Others	167	43.60
Total	383	100.00

Table 2: Distribution of patients according to the discharge diagnosis

Discharge diagnosis	Number	Percentage
Infectious and parasitic diseases	84	21.93
Endocrine, nutritional or metabolic diseases	70	18.28
Digestive diseases	59	15.40
Others	38	9.92
Hematological diseases	33	8.62
No information	32	8.36
Neuroligical and psychiatric diseases	21	5.48
Cardiovascular diseases	13	3.39
Respiratory diseases	13	3.39
Rheumatological diseases	12	3.14
Renal diseases	8	2.09
Total	383	100.00

Table 3: Distribution of patients according to the infectious and parasitic diseases

Infectious and parasitic diseases	Number	Percentage
Opportunistic infections associated with HIV infection	38	45.23
Septicemia	8	9.52
Severe malaria	5	5.95
Anemia associated with HIV infection	3	3.57
Urinary tract infection	2	2.38
Brain abscess	2	2.38
Ischemic stroke associated with HIV infection	2	238
Others	24	28.57
Total	84	100.00

Table 4: Distribution of patients according to the endocrine, nutritional or metabolic diseases

Endocrine, nutritional or metabolic diseases	Number	Percentage
Unbalanced/decompensated type 2 diabetes	37	52.85
Foot wounds in type 2 diabetic patients	12	17.14
Adrenal insufficiency	5	7.14
Necrotizing cellulitis in type 2 diabetic patients	3	4.28
Graves' disease	2	2.85
Gestational diabetes	1	1.42
Autoimmune polyendocrinopathy	1	1.42
Others	9	12.85
Total	70	100.00

Table 5: Distribution of patients according to the hematological diseases

Hematological diseases		Number	Percentage
Hematological malignancies (n= 18 cases; 56.25%)	Chronic myeloid leukemia	4	12.50
	Acute myeloid leukemia	3	9.38
	Acute lymphoid leukemia	1	3.13
	Malignant non-Hodgkin lymphoma	3	9.38
	Medullary aplasia	2	6.25
	Myelodysplastic syndrome	1	3.13
	Others	4	12.50
Anemia		13	40.63
Others		1	3.13
Total		32	100.00

Table 6: Distribution of patients according to the digestive diseases

Digestive diseases	Number	Percentage
Hepatic cirrhosis	23	38.98
Hepatocellular carcinoma	13	22.03
Gastric cancer	4	6.78

Digestive diseases	Number	Percentage
Colorectal cancer	3	5.08
Gastroduodenal ulcer	3	5.08
Liver abscess	1	1.6
Esophageal cancer	1	1.6
Gallbladder cancer	1	1.6
Peptic esophagitis	1	1.6
Others	9	15.25
Total	59	100.00

Table 7: Distribution of patients according to the cardiovascular diseases

Cardiovascular diseases	Number	Percentage
Lower limb thrombophlebitis	4	30.77
Pulmonary embolism	2	15.38
Unspecified heart disease complicated by heart failure	2	15.38
Meadows cardiomyopathy	2	15.38
Ischemic heart disease	2	15.38
Dilated cardiomyopathy	1	7.69
Total	13	100.00

Table 8: Distribution of patients according to the neurological and psychiatric diseases

Neurological and psychiatric diseases.	Number	Percentage
Ischemic stroke	10	47.62
Brain tumor	3	14.29
Hemorrhagic stroke	1	4.76
Ischemic stroke with hemorrhagic change	1	4.76
Subarachnoid hemorrhage	1	4.76
Epilepsy	1	4.76
Guillain-Barre syndrome	1	4.76
Hysterical vomiting	1	4.76
Others	2	9.52
Total	21	100.00

Table 9: Distribution of patients according to the renal diseases

Renal diseases	Number	Percentage
Nephropathies specified or not complicated with renal insufficiency	4	50.00
Nephrotic syndrome	1	12.50
Others	3	37.50
Total	8	100.00

Table 10: Distribution of patients according to the rheumatological diseases

Rheumatological diseases		Number	Percentage
Autoimmune diseases (n= 5 cases; 41.66% of cases)	Systemic lupus erythematosus	4	33.33
	Rheumatoid arthritis	1	8.33
Autoinflammatory diseases (n= 3 cases; 24.99% of cases)	Leukocytoclassic vasculitis of undetermined origin	1	8.33
	Gout	1	8.33
	Ankylosing spondylodiscitis	1	8.33
Degenerative joint diseases (n= 4 cases; 33.33% of cases)	Herniated disc	3	25.00
	Arthrosis	1	8.33
Total		12	100.00

Table 11: Distribution of patients according the respiratory diseases

Respiratory diseases	Number	Percentage
Pulmonary tuberculosis without HIV infection association	4	30.77
Multifocal tuberculosis without HIV infection association	2	15.38
Lung cancer	2	15.38
Bacterial pneumonia	1	7.69
lung abscess	1	7.69

Respiratory diseases	Number	Percentage
Chronic obstructive pulmonary disease	1	7.69
Sinusitis	1	7.69
Others	1	7.69
Total	13	100.00

DISCUSSIONS

Methodology

Our study, like others (Bagayoko [9] in 1983, Magassouba [10] in 1997 and Fomba [11] in 2012) carried out in the internal medicine department at the University Hospital Center of the Point G, was retrospective and descriptive. It is therefore limited, as it does not allow exhaustive collection of the variables studied, or in-depth analysis of significant variables. It was carried out over a 12-month period from January 01, 2016 to December 31, 2016, during which 383 patients were hospitalized.

Our selection criterion was all patients hospitalized during the study period. However, we have retained such a criterion because the aim of our study was to apprehend the problematic of internal disease distribution in the internal medicine department of the CHU du Point G. It provided us with up-to-date data on the internal diseases encountered in the department.

Socio-demographic aspects

Age

The mean age of patients by author, study site and country is shown in Table 12.

Table 12: Mean age of patients by author

Authors	Department	Country	Mean age
Matorras *et al*., [12]	Internal medicine	Spain	75.5 years
Beguin *et al*., [13]	Internal medicine	Belgium	57 years
Our study	Internal medicine	**Mali**	**49.30 years**
Agbodane *et al*., [8]	Internal medicine	Benin	47 years
Diarra *et al*., [14]	Hepato-gastroenterology	Mali	45.17 years
Kodjoh *et al*., [15]	Hepato-gastroenterology	Benin	43.17 years
Magassouba [10]	Internal medicine	Mali	42. 8 years
Zannou *et al*., [6]	Internal medicine	Benin	42 years
Dovonou *et al*., [7]	Internal medicine	Benin	40.5 years
Ly [16]	Medecine, intensive care and mental health	Mali	40.14 years
Seydou [17]	Infectious disease	Mali	38 years
Drabo *et al*., [18]	Internal medicine	Burkina Faso	36 years
Hountondji [19]	Internal medicine	Benin	36 years
Sanogo [20]	Secondary health center	Mali	26 years

In our series, the 55 - 64 age group was the most represented, accounting for 20.10% of cases (n= 77). The mean age of patients was 49.31 years, with an extreme range of [10 - 95 years], which was significantly lower than those observed by Beguin *et al*., in Belgium and Matorras *et al*., in Spain, who found 75.5 and 57 years respectively [13, 12].

Our results are similar to those found in Benin by Agbodane *et al*., Dovonou *et al*., Zannou *et al*., and Kodjoh *et al*., who reported 42, 40.5, 47 and 43.17 years respectively [8, 7, 6, 15]; and in Mali by Magassouba [10], Diarra *et al*., [14] and Ly [16], who reported 42.8, 45.17 and 40.14 years respectively. Some authors, such as Drabo *et al*., in Burkina Faso, Hountondji in Benin, and Seydou and Sanogo in Mali, had found a lower result than our observation. They were 36, 36, 38 and 26 years respectively [18, 19, 17, 20]. This may be explained by the fact that the Malian population in general is predominantly young. According to the Mali Demographic and Health Survey (EDSM V), 46.6% of the population is under 15 years of age [21].

Sex

In our series, 52.48% of cases (n= 201) were female, with a sex ratio of 0.90. In 2006, a study carried out by Sanogo [20] on the morbidity and mortality profile at the Bougouni Secondary Health Reference Centre noted a predominance of females, with a sex ratio of 1.03. In contrast, most authors from the country and the West African setting reported a male predominance: Bertrand [22], Magassouba [10], Fomba [11], Hountondji [19], Drabo *et al*., [18], Ouédrago *et al*., [4], Zannou *et al*., [6], Diarra *et al*., [14], Bagny *et al*., [23] and Ly [16].

One hypothesis that could explain this imbalance (female predominance) was the importance of infectious and parasitic pathologies and metabolic endocrine diseases in our study, which predominantly affected women. Moreover, in Mali, the sex ratio in the general population is 1.02 in favor of women [21].

Discharge diagnosis

In our study, infectious and parasitic diseases, endocrine, nutritionnal and metabolic diseases, and digestive digestive were the three main nosological groups diagnosed in internal medicine, accounting for 21.93% of cases (n= 84), 18.38% of cases (n= 70) and 15.40% of cases (n= 59) respectively.

Infectious and parasitic diseases

The frequency of infectious and parasitic pathologies by author, study site and country is shown in Table 13.

Table 13: Frequency of infectious and parasitic diseases by author

Authors	Department	Country	Infectious and parasitic diseases
Zannou *et al*., [6]	Internal medicine	Burkina Faso	60.5%
Dovonou *et al*., [7]	Internal medicine	Benin	53.05%
Nzamba Nzamba [24]	Internal medicine	Gabon	51.79%
Agbodane *et al*., [8]	Internal medicine	Benin	46.3%
Ouédrago *et al*., [4]	Internal medicine	Burkina Faso	37.02%
Hountondji [19]	Internal medicine	Benin	27.4%
Fomba [11]	Internal medicine	Mali	26.78%
Our study	Internal medicine	Mali	21.93%
Sankalé *et al*., [25]	Internal medicine	Senegal	16.34%
Drabo *et al*., [18]	Internal medicine	Burkina Faso	11.2%

In our series, infectious and parasitic diseases were found in 21.93% of cases (n= 84). Our result is similar to that obtained by Fomba [11] in Mali and Sankalé *et al*., [25] in Senegal, who found 26.78% and 16.34% respectively.

On the other hand, it was higher than that of Drabo *et al*., [18], who found 11.2%, and lower than those of authors such as Dovonou *et al*., [7], Hountondji [19], Agbodane *et al*., [8], Ouédrago *et al*., [4], Zannou *et al*., [6] and Nzamba Nzamba [24], who found 53.05%, 27.4%, 46.3%, 37.02%, 60.5% and 51.79% respectively.

This difference could be related to the methodologic approach on the one hand, and on the other, due to the emergence and spread of certain infectious diseases such as HIV infection, notably the disparity in their prevalence in African countries.

Endocrine, nutritional and metabolic diseases

Table 14 shows the frequency of endocrine, nutritional and metabolic diseases by author, study site and country.

Table 14: Frequency of endocrine, nutritional and metabolic diseases by author

Authors	Department	Country	Endocrine, nutritional or metabolic diseases
Fomba [11]	Internal medicine	Mali	25.44%
Our study	Internal medicine	Mali	18.3%
Drabo *et al*., [18]	Internal medicine	Burkina Faso	7.2%
Agbodane *et al*., [8]	Internal medicine	Benin	7.1%
Dovonou *et al*., [7]	Internal medicine	Benin	4.36%
Ouédrago *et al*., [4]	Internal medicine	Burkina Faso	3.24%
Zannou *et al*., [6]	Internal medicine	Burkina Faso	2.3%

Endocrine, nutritional or metabolic diseases accounted for 18.38% of cases (n= 70) in our series. In 2012, Fomba [11], in the internal medicine department, reported a frequency of 25.44% of cases.

The frequency observed in our study was clearly higher than that reported by authors such as Dovonou *et al*., [7], Agbodane *et al*., [8], Drabo *et al*., [18], Ouédrago *et al*., [4] and Zannou *et al*., [6], who had obtained 4.36%, 7.1%, 7.2%, 3.24% and 2.3% respectively. This state of fact can be explained by the fact that galloping urbanization and a rising socioeconomic standard of living are accompanied by the emergence of metabolic diseases. Our study took place in Bamako, the capital of Mali. According to EDSM V, in Mali, the urban zone concentrates the richest population, i.e. 72%.

Digestive diseases

The frequency of digestive diseases by author, study site and country is shown in Table 15.

Table 15: Frequency of digestive diseases by author

Authors	Department	Country	Digestive diseases
Fomba [11]	Internal medicine	Mali	19.76%
Ouédrago *et al*., [4]	Internal medicine	Burkina Faso	19.15%

Authors	Department	Country	Digestive diseases
Agbodane *et al*., [8]	Internal medicine	Benin	19%
Our study	Internal medicine	Mali	15.4%
Hountondji *et al*., [19]	Internal medicine	Benin	14%
Dovonou *et al*., [7]	Internal medicine	Benin	11.22%
Zannou *et al*., [6]	Internal medicine	Burkina Faso	3.1%
Drabo *et al*., [18]	Internal medicine	Burkina Faso	3%

In our series, digestive diseases were found in 15.40% of cases (n= 59). Drabo *et al*., [18] and Zannou *et al*., [6] reported 3% and 3.1% respectively. These were lower than ours. However, this result was comparable to those obtained by Fomba [11], Do-vonou *et al.*, [7], Hountondji [19], Agbodane *et al*., [8] and Ouédrago *et al*., [4], who found 19.76%, 11.22%, 14%, 19% and 19.15% respectively. Today, studies in sub-Saharan Africa highlight the high frequency of chronic liver disease. Bagny *et al*., [23] in 2016 in Togo reported 26% cases of hepatic cirrhosis and 17% cases of hepatocellular carcinoma. Fomba [11] in the internal medicine department in 2012 noted that the frequency of hepatic cirrhosis and hepatocellular carcinoma would represent 37.47% of digestive pathologies. The disparities observed between our different studies could be linked to the profile of the population studied and the study site.

CONCLUSION

This work has enabled us to highlight an epidemiological overview of internal diseases in hospitalized patients in the department of internal medicine at the University Hospital Center of the Point G. our study revealed that internal diseases are frequently diagnosed in young adults, preferably women. Infectious and parasitic diseases, endocrine, nutritional and metabolic diseases and digestive diseases appear to be the clinical situations most frequently encountered in internal medicine. Opportunistic infections associated with HIV infection would appear to be the most frequent among infectious and parasitic diseases, that of unbalanced/decompensated type 2 diabetes among endocrine, nutritional and metabolic diseases, and that of hepatic cirrhosis among digestive diseases. Health authorities must take priority action to reduce hospital morbidity and mortality associated with these internal diseases.

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