



**Research Article**

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## Prevalence and Etiologies of Dyspnea in Adults at the General Hospital of Douala, Cameroon

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### Abstract

**Introduction:** Dyspnea is a subjective feeling of discomfort. It can be acute or chronic onset. Our objective was to determine the frequency and etiologies of dyspnea in adults at the medical and surgical emergencies of the Douala General Hospital. **Methods:** This was a retrospective study conducted from January 1, 2018 to February 28, 2020. Patients over the age of 18 who came to consult for dyspnea were enrolled. Sociodemographic and clinical data were collected and analyzed using SPSS version 25 software. **Results:** Of the 565 files collected, 55.93% were women. The mean age was  $47.66 \pm 17.87$  years. The frequency of dyspnea was 4.18%. Married people represented 53.63% of the workforce. History of high blood pressure (39.14%), chronic kidney disease (26.70%) and HIV infection (12.21%) were the most common. Acute dyspnea accounted for 89.56% of cases. The etiologies were dominated by: cardiovascular conditions (24.43%), non-tumor bronchopulmonary and pleural pathologies (20.88%), tumoral conditions (10.27%). The most common cardiac and pulmonary causes were acute pulmonary edema (78.26%), lower respiratory infections (52.54%) and exacerbations of asthma (23.73%). **Conclusion:** Dyspnea represents 4.18% of admissions to the medico-surgical emergency department of the Douala General Hospital. Etiologies are dominated by cardiac and lower respiratory causes.

**Keywords:** Dyspnea, Adults, Frequency, Etiologies, Douala General Hospital.

### INTRODUCTION

Dyspnea is a subjective feeling of respiratory discomfort [1]. The American Thoracic Society describes it as “both a sensory and emotional experience of difficult, uncomfortable breathing” [2]. A distinction is made between acute onset dyspnea and chronic dyspnea. The latter, by definition, has been present for more than four weeks [3].

Its frequency varies according to the services. In Germany, it accounts for 7.4% of emergency room consultations [4]. In Africa, *Codjo et al.* in Benin noted a 2.9% prevalence of non-traumatic dyspnea in emergency departments, while *Achi et al.* in Ivory Coast found 9.07% [5,6].

Dyspnea can be caused by many different underlying conditions. These include cardiovascular, bronchopulmonary and pleural, otolaryngological (ENT), metabolic and neuromuscular pathologies and pharmacological causes [7,8].

Acute dyspnea can be life-threatening (pulmonary embolism, acute myocardial infarction). Twelve percent of patients seen by emergency medical services suffer from dyspnea and half of them must be hospitalized; those who are hospitalized have an in-hospital mortality of about 10% [3].

Given the complexity, frequency and severity of this symptom, it seemed appropriate to conduct this study, the purpose of which was to determine the frequency and etiologies of dyspnea at the medical and surgical emergency department of the General Hospital from Douala (DGH), Cameroon.

### PATIENTS AND METHODS

#### Setting and study population

This retrospective and descriptive study covered the period from January 1, 2018 to February 28, 2020 (26 months). It took place in the medical and surgical emergency department of the HGD. Medical records of

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patients 18 years and older admitted and registered for dyspnea or difficulty breathing were included.

#### Exclusion criteria

Medical records not found.

#### Procedures

Sampling was consecutive. After consulting the registers of admissions to medical and surgical emergencies, the files of patients who met our inclusion criteria were retained. The variables collected included:

- Sociodemographic data (age, sex, marital status),
- Clinical data: history (cardiovascular, respiratory, HIV, diabetes, allergy, sickle cell disease, neuropsychiatric, medication taken, characteristics of dyspnea (duration of evolution), associated symptoms, etiologies of dyspnea.

#### Statistical analysis

The data were entered on Cs pro version 7.2. Analysis was performed using spss software version 23.0. Qualitative data was represented as numbers and frequencies. Quantitative data was represented by its

mean and standard deviation.

#### Ethics

The ethical clearance was given by the Institutional Ethics Committee of the University of Douala. Total confidentiality was respected. All analyzes were done anonymously.

#### RESULTS

Of the 14.825 adult admissions to medical and surgical emergencies, 623 had dyspnoea, a frequency of 4.18%. We have 58 files, and the study was conducted on the 565 files that met our inclusion criteria.

#### Epidemiological characteristics and anamnestic data.

The mean age (standard deviation) was 47.66 ( $\pm$  17.87) years with extremes of 18 and 96 years. The most represented age group was that of [35-45[years (19.65%). Women were the most numerous (55.93%) with a sex ratio of 0.79. Married people represented 53.63% of the workforce. History was found in 442 patients (78.23%). They were dominated by: arterial hypertension (HTA) (39.14%), chronic kidney disease (26.70%) and HIV infection (12.21%). (Table 1).

**Table 1:** socio-demographic characteristics, history and co-morbidities of dyspneic patients at the General Hospital of Douala, Cameroon. N= 565

Variables	Modalities	Values
Sex	Male	249 (44.07)
	Female	316 (55.93)
Age (year)	Mean	47.66 ( $\pm$ 17.87)
	Extremes	18 and 96
	[18 – 25[	60 (10.62)
	[25- 35[	90 (15.92)
	[35 - 45[	111 (19.65)
	[45 – 55[	99 (17.52)
	[55 – 65[	98 (17.34)
	>65	107 (18.94)
Matrimonial Status	Married	289 (53.63)
	Single	199 (35.22)
	Widower	63 (11.15)
History		442 (78.23)
	High Blood Pressure	173 (39.14)
	Chronic renal disease	118 (26.70)
	HIV Infection	54 (12.21)
	Diabetes	51 (11.53)
	Heartfailure	45 (10.18)
	Cancer	39 (12.22)
	Asthma	38(8.82)
	Alcoholconsumption	34(7.69)
	Tobacco consumption	30(7.79)
	Tuberculosis	26(5.88)
	Atrial Fibrillation	17(3.85)
	Others*	39 (8.82)

\*Cirrhosis, thyroid disease, COPD, gastropathy, neuropsychiatric disorders

## Clinical data

Acute dyspnea constituted 89.56% and chronic dyspnea 10.44%. The main symptoms associated with dyspnea were cough (32.57%), chest pain (16.11%), heart palpitations (4.60%) and abdominal pain (4.25%).

The etiologies encountered were dominated by: cardiovascular conditions (24.43%), non-tumor bronchopulmonary and pleural

pathologies (20.88%), tumoral conditions (10.27%), laryngotracheal conditions (0.70%), hematological disorders (1.06%), psychogenic disorders (4.07%), digestive disorders (1.94%).

The most common cardiac and pulmonary causes were acute pulmonary edema (APO) (78.26%), lower respiratory infections (52.54%) and exacerbations of asthma (23.73%).

**Table 2:** Characteristics and causes of dyspnea in patients at the Douala General Hospital, Cameroon. N= 565

Variables	Modalities	Values
Dyspnea characteristics		
	Acute dyspnea	506 (89.56)
	Chronicdyspnea	59 (10.44)
Etiology :		
Cardiovascular affections N=138 (24.43)		
	Acute pulmonaryedema	108 (78.26)
	Cardiogenicshock	14 (10.14)
	Pulmonaryembolism	9 (6.52)
	Heart rhythm disorder (poorly tolerated)	4 (2.90)
	Infectiveendocarditis	1 (0.72)
	Aortic dissection	1 (0.72)
Non-tumoral bronchopulmonary and pleural diseases N=118 (20.88)		
	Lowerrespiratory infections	62 (52.54)
	Asthma exacerbation	28 (23.73)
	Pleura affections :-pleurisy N=17 -pneumothorax N=6 COPD exacerbation*	23 (19.49)
		5 (4.24)
Tumoral affections N=58 (10.27)		
	Pleuropulmonary metastases	40 (68.97)
Primary bronchopulmonary tumors N=6 (10.34)		
	Laryngealtumors	5 (8.62)
	Compressive goiter	3 (5.17)
	Pulmonary Kaposi	3 (5.17)
	Myeloproliferative syndrome	1 (1.72)
Laryngotracheal disorders N=4 (0.71)		
	Trachealdecannulation	2 (50.00)
	Quincke'sedema	1(25.00)
	Trachealstenosis	1 (25.00)
Hematological disorders N=6 (1.06)		
	Anémiea	6 (100.00)
Metabolicdisorders N=15 (2.65)		
	Acidose métabolique	15(100.00)
Psychogenicdisorders N=23 (4.07)		
Digestive disorders N= 11(1.94)		
	Gastropathy	10 (90.90)
	Ascitis	1(9.10)
Other disorders** N= 44 (3.72)		

\*COPD \*\*Spinal cord compression, nitric oxide poisoning, head trauma, Hells syndrome

## DISCUSSION

To assess the prevalence and etiologies of dyspnea in hospitals in Douala, Cameroon, we conducted a retrospective survey of the records of patients admitted to the medical and surgical emergency department of the GHD.

The proportion of dyspnea was 4.18% of admissions to medical and surgical emergency departments. This value is higher than those found by *Codjo et al.* in Benin (2.9%) and by *Stevens et al.* in the USA (3.7%) [5,9]. But it is lower than those of *Kelly et al.* (5.2%), *Mockel et al.* in Germany (7.4%) and *Achi et al.* in Ivory Coast (9.07%) [10,4,6].

The female predominance of 55.93% in our series is superimposable on the value of 55.9% of *Duong et al.* in 2018 in Canada, and 56.8% of *Stevens et al.* in 2018 in the USA [11,9]. But is higher than that of *Codjo et al.* in Benin (52.7%) [5].

The average age of  $47.66 \pm 17.87$  years of our participants is certainly lower, but closer to those reported by *Codjo et al.* in Benin ( $49.9 \pm 18.89$  years) and *Achi et al.* in Ivory Coast (46 years old) [5,6]. A significantly higher mean age was reported by *Kelly et al.* (67 years old), *de Mockel et al.* (57 years old), *Laribi et al.* (69 years old) [10,4,12]. This age difference testifies to the youthfulness of the population in sub-Saharan Africa [13].

Nearly 4/5th (78.23%) of our patients had at least one comorbidity and hypertension was the most common (39.14%). This observation has been made by many authors [10,12,9], and could be explained by an increase in non-communicable pathologies in Africa [14].

Chronic dyspnea (10.44%) was uncommon in our series. It is generally due to rare pathologies such as COPD, congestive heart failure, interstitial lung disease, and psychiatric pathologies (anxiety disorders, panic disorders, somatization disorders) [15].

The causes of dyspnea in our study were dominated by cardiovascular pathologies (24.43%) and non-tumor bronchopulmonary and pleural conditions (20.88%). These results are similar to those of *Kelly et al.*, who reported 20.2% of respiratory etiologies and 5.8% of cardiovascular causes [10]. As for *Stevens et al.*, 32.9% were of cardiovascular etiologies and 26.3% respiratory [9].

Heart and lung diseases are often present in the same patient concurrently. If a cause of dyspnea is found in one of these two organ systems, the search for a possible additional cause in the other organ system should continue, as comorbidity is very common [3].

Overall, the pathologies most encountered in our series were OAP (19.08%) followed by lower respiratory infections (10.95%) and asthma (23.73%). These results are similar to those of *Umuhire et al.* in 2019 in Rwanda who reported 53.8% for decompensated heart failure and 38.0% for lower respiratory infections [16].

Among the other causes of dyspnea, anemia was described in 1.06% of patients in our series. According to *Berliner et al.*, there is no clear threshold value of hemoglobin (Hb) level below which anemic patients become dyspneic [3].

The World Health Organization (WHO) defines anemia as an Hb value below 8.06 mmol/L (13g/dL) in humans or 7.44 mmol/L (12 g/dL) in women outside of pregnancy. Anemia requires further diagnostic evaluation in all cases, particularly if the Hb concentration is below 11 g/dL or has dropped for unclear reasons [3].

Some causes of dyspnea described in the literature [3]. were not found in our series. These include: (a) neuromuscular diseases such as Duchenne muscular dystrophy, myasthenia gravis, motor neuron diseases such as amyotrophic lateral sclerosis and neuropathies such as Guillain-Barré syndrome; (b) pharmacological causes, including the use of non-selective beta-blockers (can cause bronchospasm through their  $\beta_2$ -blocking effect and thus promote dyspnea attacks), or non-steroidal anti-inflammatory drugs.

## CONCLUSION

Dyspnea represents 4.18% of consultations in the medical-surgical emergency department of the HGD. They are essentially acute. Etiologies are dominated by cardiac and lower respiratory causes.

## Conflicts of interest

None declared.

## Financial support

None declared.

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