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Effect of Covid-19 Pandemic on the Management of Medical Emergencies at the Yaounde Emergency Centre

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Authors' contributions

This work was carried out in collaboration among all authors. Author TMG helped in conceptualization, collected data, analysed and wrote the draft of the manuscript. Author KC designed the study, performed data interpretation of results and drafted of the manuscript. Authors DCA, SWY, AJ and ATF did the correction and drafting of the manuscript. Author NYMA designed and drafted of the manuscript. Author KI helped in data analysis, performed interpretation and wrote the draft of the manuscript. Author SPC wrote the draft of the manuscript. All the authors read and approved the final draft for publication.

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ABSTRACT

Background: The current coronavirus pandemic (COVID-19) has put the world into an unprecedented global crisis. Health systems have been faced with an enormous challenge to provide the necessary care for this vast burden of patients. As a result, emergency and scheduled care for non-COVID patients has been affected. This study evaluates the effect of the COVID-19 pandemic on the management of medical emergencies at the Yaoundé Emergency Centre.

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Methodology: This was an analytical cross-sectional study with an exhaustive sampling, from patients from March to September 2019 and 2020. The analysis was done in Epi-info version 7.2.2.6 and Microsoft Excel 2016.
Results: Data were collected from 5496 patients in medical emergencies. COVID-19 pandemic has eventually decrease medical emergencies [aOR=0.91, 95%CI=0.76-0.91, P=<0,0001] but didn't impact significantly the rate of mortality [aOR=1.06, 95%CI =0.71-1.57, P=0,79]. Cardiovascular Diseases were the first cause of morbidity.
Conclusion: It emerges from this study that the COVID-19 pandemic has decreased the attendance in medical emergencies but didn't affect significantly the rate of mortality.

Keywords: Medical emergencies; COVID-19; YEC; Yaoundé.

1. INTRODUCTION

CoViD-19 is an infectious respiratory disease caused by the novel coronavirus SARS-CoV-2, COVID-19. It was declared a pandemic by the World Health Organization (WHO) on 11 March 2020 [1]. Since then, the number of infections has continued to rise, putting pressure on our health care system and forcing widespread containment and reorganization of services to improve our care for patients with COVID-19 [2]. This had medical consequences for the people served by the hospitals [3].

The management of emergencies has become a very sensitive issue in the organization of the health system. Since their creation in the mid-1960s, the activity of hospital emergency departments has been increasing year after year [4]. This constant increase in the number of patients in emergency departments is a phenomenon common to all countries that have them [5].

It is a real public health problem in Africa because emergencies affect the young population, mainly males, which is a characteristic found in the African series [6-8]. This is a reflection of our demography where the age pyramid has a broad base, that is, more young people than older ones but regarding medical emergencies, the elderly are instead the most affected population. In the West, on the other hand, where the population is aging, we find higher average ages [9].

In sub-Saharan Africa, the management of emergencies is characterized by an inadequacy concerning the demand for care due to the absence of a financing framework, the non-existence of an organized system of pre-hospital management of emergencies, and the inadequacy of the reception health structures in terms of their treatment, the nature of which has been modified by explosive urbanization [10].

This study aimed to describe the specifics of the medical management of patients with urgent conditions in the context of this pandemic.

2. MATERIALS AND METHODS

This was an observational, analytical cross-sectional study with two parts, which served to evaluate the effect of the COVID-19 pandemic on the management of medical emergencies at the YEC.

The descriptive component was to determine the distribution and mortality of patients in the medical emergency department.

The analytical component was to investigate whether or not there was an association between exposure to the COVID-19 pandemic and the rates of attendance and mortality in medical emergencies. In this arm, exposed patients were those seen in medical emergencies from March to September 2020 (during the pandemic) and unexposed patients were those seen in medical emergencies from March to September 2019 (before the pandemic). There was an association when the Odds Ratio (OR) was less or greater than 1 and significant when P-value < 0.05 or 1 did not belong to the confidence interval (CI).

The study was conducted at the Yaounde Emergency Centre, in the MFOUNDI department, at the Cité Verte Health District in the MESSA neighborhood.

The sample size was exhaustive, as all patients received in the emergency room during the study period had to be included in the sample to minimize selection bias.

Software such as Epi Info version 7.2.2.6 and Microsoft Excel 2016 facilitated data entry and analysis. The significance level was alpha=0.05. Microsoft Excel was used for graphs and tables and Epi-info was used for various analyses and the comparison of both periods.

The review grid contained two sections: rate of attendance and rate of mortality.

Rate of attendance: we collected data on age, sex, number of consultations at the YEC, number of consultations at medical emergencies, confirmatory diagnoses found at medical emergencies.

Rate of mortality: we collected data on age, sex, number of deaths at the YEC, number of deaths at medical emergencies, causes of deaths at medical emergencies.

We have presented qualitative variables as frequencies and percentages (%). Continuous variables are presented as means± standard deviation (SD). Chi-Square tests were performed to investigate the association of attendance and mortality

3. RESULTS

A total of 5496 patients were received in medical emergencies with 3696 patients in 2019 and 1800 patients in 2020 (Fig. 1).

The attendance rate in 2019 was 50.67% compared to 46.26% in 2020.

3.1 Distribution by Socio-demographic Characteristics

The age of the patients who were consulted in medical emergencies ranged from 1 to 96 years, with a mean age of 50.83±19.89 years in 2019 and 52.34±19.33 years in 2020. The most frequent age range found was ≥ 50years (52.35% in 2019 and 56.11% in 2020).

Men were frequently consulted in medical emergencies during both periods (54.09% in 2019 and 58.33% in 2020) compared to women with a sex ratio of 1.18 in 2019 and 1.4 in 2020 in favor of men.

3.2 Distribution of Consultations by Month

Looking at Fig. 2 shows the number of consultations per month in 2019 and 2020 at medical emergencies. Here, we see that the number of cases in 2019 is higher than the number in 2020 per month from March to September.

3.3 Distribution of Consultations by Pathology

Table 1 shows the type of pathology recorded in medical emergencies before and during the pandemic.

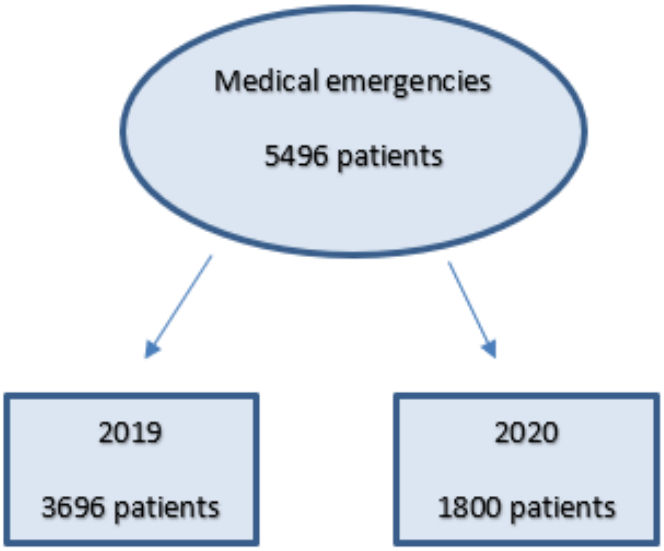

Fig. 1. Number of patients received

Table 1. Distribution of pathologies found at medical emergencies in 2019 and 2020

Pathologies	2019	2020
	Frequency (Percentage)	Frequency (Percentage)
CVD	799 (21,62)	386 (21,44)
Sepsis	651 (17,61)	296 (16,44)
strokes	635 (17,18)	324 (18,00)
Neurologic	449 (12,15)	235 (13,06)
Digestif	340 (9,20)	174 (9,67)
Respiratory	328 (8,87)	170 (9,44)
Metabolic	158 (4,27)	86 (4,78)
Intoxication	126 (3,41)	56 (3,11)
Malaria	123 (3,33)	65 (3,61)
Uro-genital	87 (2,35)	8 (0,44)
TOTAL	**3696 (100)**	**1800 (100)**

**CVD: Cardiovascular diseases*

Fig. 2. Distribution of the number of consultations at medical emergencies in 2019 and 2020

Cardiovascular diseases (CVD) remain the main cause of morbidity in medical emergencies both in 2019 and 2020.

3.4 Distribution of Death Cases

Concerning mortality, 649 deaths were recorded at the YEC during our study period with 528 cases of death belonging to medical emergencies. Fig. 3 shows the distribution of death cases.

The mortality rate at medical emergencies increased from 4.03% to 6.01%.

3.5 Distribution of Deaths by Socio-demographic Characteristics

The age of patients who died in medical emergencies ranged from 2 to 96 years, with a mean age of 56.57±19.7 years in 2019 and 56.85±17 in 2020. The most common age range was

≥ 50 years (63.27% in 2019 and 65.15% in 2020).

Among the patients in medical emergencies, the mortality rate was higher in men during both periods (56.46% in 2019 and 60.26% in 2020) compared to women with a sex ratio of 1.30 in 2019 and 1.52 in 2020 in favor of men.

Fig. 4. shows us the distribution of death cases by month.

Table 2 shows the pathologies that caused the greatest number of deaths during our study period. Sepsis was the first cause of mortality in 2019 but strokes became the first cause of mortality in 2020.

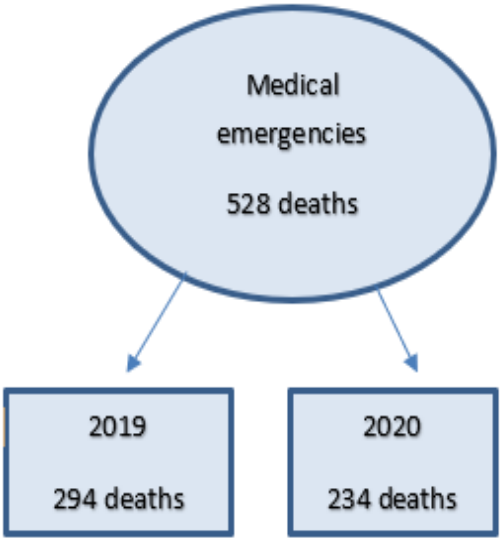

Fig. 3. Number of death cases

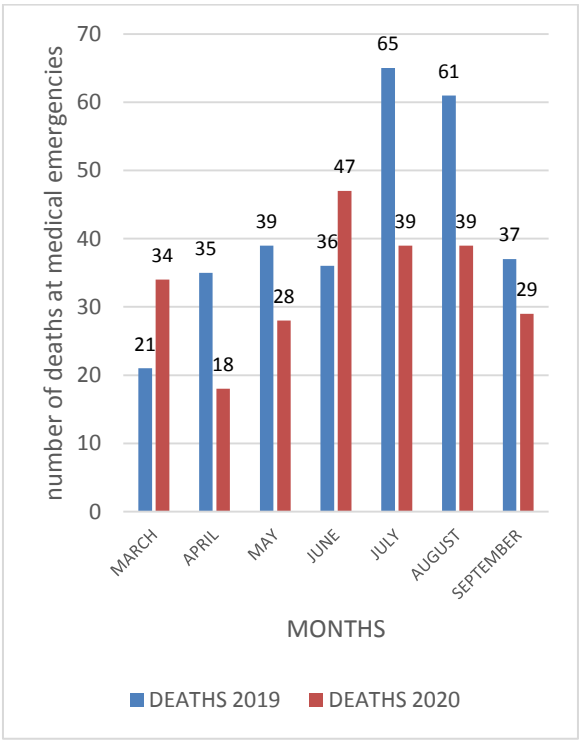

Fig. 4. Distribution of death cases at medical emergencies in 2019 and 2020

Table 2. Distribution of pathologies at medical emergencies in 2019 and 2020

Pathologies	2019	2020
	Frequency (Percentage)	Frequency (Percentage)
Sepsis	77 (26,19)	44 (18,80)
CVD	71 (24,15)	47 (20,09)
strokes	45 (15,31)	62 (26,60)
Neurologic	30 (10,20)	27 (11,54)
Respiratory	27 (9,18)	19 (8,12)
Digestif	17 (5,78)	13 (5,56)
Metabolic	12 (4,08)	9 (3,85)
Malaria	9 (3,06)	11 (4,70)
Intoxication	4 (1,36)	2 (0,85)
Uro-genital	2 (0,68)	0 (0,00)
TOTAL	**294 (100)**	**234 (100)**

**CVD: Cardiovascular diseases*

Table 3. Association between the occurrence of the pandemic and medical emergencies

Modality	Exposition to the pandemic		OR	CI at 95%	P-value
	Yes	No			
Consultations at the medical emergency	1800	3696	0,84	[0,76-0,91]	<0,001
Deaths at the medical emergency	234	294	1,06	[0,71-1,57]	0,79

3.6 Association between the Pandemic and Medical Emergencies

In Table 3, we note an association between the occurrence of the pandemic and attendance and mortality in medical emergencies. Mortality was not significantly impacted but attendance was.

4. DISCUSSION

At the YEC, the rate of attendance at medical emergencies was 50.67% in 2019 and 46.26% in 2020. This shows a difference before and during the pandemic, but still within the range of the rates found in 2001 in Dakar, Senegal [11] of 46.0% at medical emergencies and 2016 at the Niono Health Centre in Mali [12] showing a rate of consultations at medical emergencies of 33.83%. This is explained by an increasing population and rapid urbanization every year in developing countries, which is mainly made up of active young people and at-risk from poor lifestyle habits that increase the occurrence of these emergencies.

Our study showed an average age of 50.83± 19.89 years in 2019 and 52.34± 19.33 years in 2020 showing a slight increase in age from 2019 to 2020. This older age is explained by the fact that the elders are most at risk because of their weakened immune systems and basal metabolism. The main conditions found put cardiovascular diseases (CVD) first (21.62% in 2019 and 21.44% in 2020). Strokes dropped from third place in 2019 (17.18%) to second in 2020 (18.0%) but were not statistically significant for stroke (p=0.50). Another study, this time conducted in France [13] at the Martinique University Teaching Hospital, shows data almost similar to ours, with the number of strokes during containment (n = 85) and outside containment (n = 98) being comparable and, like us, concludes that the pandemic did not have a significant impact on the overall number of strokes (p=0.42). This decrease in the attendance rate can be explained by another study carried out in 2020 [14] in Morocco among ophthalmologists, which revealed the following reasons: instructions to go out as little as possible, to limit travel as much as possible, to postpone anything that is not essential, and finally, the patients' fear of catching the virus when coming to the consultation.

Another study [15] between January and April 2020 used a tele-stroke network in the United States of America (USA) to show a 13-40% decrease in the number of stroke-related phone calls. Our results found on Cardiovascular Diseases (CVD) are higher than the one found in 2012 [16], at the University Teaching Hospital of Cocody-Abidjan in Ivory Coast, which had only 12% of cases for Cardiovascular Diseases yet according to another study in 2019 [17] at the

University Teaching Hospital of Point G in Bamako, Mali, strokes were the main causes at medical emergencies with 41.1%.

Cardiovascular Diseases (CVD) continue to increase as the years go by, and a study at the Gabriel Touré University Teaching Hospital in Mali in 2011 [18], showed that the main risk factors for cardiovascular emergencies were: hypertension 66.1%, diabetes 5.3%, dyslipidemia 5.3%, obesity 3.8%, sedentary lifestyle 3.4% and smoking 3.4%.

4.1 Deaths in Medical Emergencies

The mortality rate in medical emergencies that we found in our study period was 7.95% in 2019 against 15.89% in 2020, which is much lower than the rate found in 2012 [16] at the University Teaching Hospital of Cocody-Abidjan in Ivory Coast, which was 35.4% in medical emergencies, clearly showing the performance of the Yaoundé Emergency Centre in the management of patients who came late for treatment in medical emergencies during the pandemic.

We note that strokes, which were the 3rd cause of death in 2019 (15.31%), became the 1st in 2020 (26.50%) with a case fatality rate in 2019 and 2020 of 9.76% and 13.89% respectively. It has increased but remains lower compared to that found in 2008 [19] in the intensive care unit of the Douala General Hospital, showing that out of 80 stroke patients, the case fatality rate was 53.75%, with the risk factors of poor prognosis, hemorrhagic stroke, a delay in treatment of more than 2.5 days, inadequate treatment due to lack of technical facilities and coma. In 2020, in the emergency department of the Yalgado Ouedraogo University Teaching Hospital in Burkina Faso, a study [20] showed that hypertension was the most common risk factor (52.5%) for stroke-related mortality, followed by excessive alcohol consumption (20.9%).

5. CONCLUSION

This study aimed to assess the effect of the pandemic on the management of medical emergencies. The results we obtained show that medical emergencies constitute almost half of the total consultations at the YEC (50.67% in 2019 and 46.26% in 2020). Even if mortality in medical emergencies is not statistically significant in our study despite the existing association between the pandemic and deaths recorded in emergencies, [OR=1.06 p-value=0.84 95% CI=0.71 - 1.57] it remains worrying because during the pandemic, people feared hospital structures for fear of being contaminated, thus developing complications at home and only going to the hospital when the situation was already aggravated and despite intensive care, the vital prognosis was already committed. As for consultations, there was a statistically significant association between the pandemic and the level of consultations in medical emergencies [OR=0.84 p-value=<0,001 95% CI=0.76 – 0.91] showing that the pandemic has eventually reduced the rate of attendance at medical emergencies.

Cardiovascular Diseases (CVD), strokes, and sepsis continued to maintain the top three causes of patient admission and death at the health facility.

CONSENT

It is not applicable.

ETHICAL APPROVAL

As per international standard or university standard written ethical approval has been collected and preserved by the author(s).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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