



ORIGINAL ARTICLE



Effect of the COVID-19 pandemic on the financial revenues of public hospitals with a care centre: case of the Yaoundé Central Hospital

Charles Kouanfack^{1*} | Suzie Fomekong Fouakeng¹ | Michel Foalem Nguemkam^{2,3}
| Solange Youdom Whegang¹ | Alain Djam Chefor¹ | Anastase Dzudie⁴
| Jérôme Ateudjieu^{1,5} | Eugène Sobngwi⁶ | Pierre Joseph Fouda³

¹Faculty of Medicine and
Pharmaceutical Sciences,
University of Dschang, Cameroon

²ANRS-Cameroon site, Yaoundé
Central Hospital, Cameroon

³Yaoundé Central Hospital,
Yaoundé, Cameroon

⁴Clinical Research Education,
Networking and Consultancy
(CRENC), Cameroon

⁵Meilleur Accès aux Soins de
Santé (M.A SANTE), Cameroon

⁶Ministry of Public Health,
Yaoundé, Cameroon,

Abstract

Background: In 2020, the world was confronted with COVID-19, which caused a socio-economic panic in several sectors. The use of hospitals has been affected, with an impact on their financial performance. The objective of this study was to assess the effect of the pandemic on the financial performance of a hospital with a care center.

Methodology: This was a cross-sectional study targeting the Yaoundé Central Hospital over two periods : before the pandemic (March to August 2019) and during the pandemic (March to August 2020). Based on the administrative accounts, revenues from the main sources of financial inflows were recorded and compared before and during the pandemic.

Results: From March to August 2019, overall revenue was 1,131,525,099 FCFA and from March to August 2020, it was 762,770,714 FCFA, representing a drop of 32.6%. Medical imaging showed a drop of 14% corresponding to a loss of 96,500,052 FCFA. The laboratory showed a 21% decrease corresponding to a loss of 80,691,347 FCFA. Hospital admissions fell by 21%, corresponding to a loss of 62,124,675 FCFA. Consultations fell by 10%, corresponding to a loss of 49,265,835 FCFA.

Conclusion: The COVID-19 pandemic had a negative effect on the financial revenues of the Yaoundé Central Hospital.

Keywords: COVID-19, financial revenue, Yaoundé Central Hospital.

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INTRODUCTION

Coronavirus 2019 (COVID-19) has spread around the world, infecting and killing millions of people. The disease causes fever, cough and dyspnoea in the context of viral pneumonia (1). Due to the rapid increase in the number of infected patients and deaths caused by COVID-19, the World Health Organization (WHO) classified the situation as a public health emergency of international concern in January 2020. Despite drastic containment measures in China, the virus has spread worldwide and the WHO declared it a pandemic on 11 March 2020 (2). The disease threatens human health and public safety. Almost every country in the world is dealing with the consequences of this pandemic, as it has set the stage for a very serious health crisis that has had a major impact on the global economy.

Health disasters, whether communicable or non-communicable, not only impact on global health but also cause widespread socio-economic disruption and loss. Like wars and socio-political changes, communicable diseases have changed the world's economy and politics throughout history.

The COVID-19 pandemic has had an impact on health systems around the world. Many hospitals reduced or postponed non-emergency care. This has had medical consequences for the people served by hospitals and financial consequences for hospitals (3). Health systems around the world are struggling to cope. The situation is particularly difficult in low-income country settings, where health and social systems are already fragile. Health facilities in many places are closing or limiting their services.

The health system has for years provided hospitals with the means to make profits, including surgeries, imaging and other services. The covid-19 pandemic showed the vulnerability of this business model with cancelled procedures and delayed imaging (4). In view of this situation, it was necessary to investigate the effect of the Covid-19 pandemic on the financial revenues of hospitals. The results of this study will enable the various hospital departments to prepare for pandemic management and to assess the loss of revenue due to the pandemic.

MATERIALS AND METHODS

This was a descriptive cross-sectional study to assess the effect of the COVID19 pandemic on the financial revenue of the Yaoundé Central Hospital. The main sources of financial inputs to the hospital studied were consultations, surgery, medical imaging, laboratory, pharmacy and hospitalizations. The data were collected from the following periods : pre-pandemic (March to August 2019) and during the pandemic (March to August 2020). Note that the first case of COVID-19 was identified in Cameroon on the 6 of March 2020 and the peak of the first wave occurred in July 2020 (5). For data collection, a pre-designed grid was used. A review of the records of the financial and accounting section of the Yaoundé Central Hospital was conducted. At the end of this review, data on revenues from consultations, hospitalizations, surgical interventions, medical imaging, laboratory and pharmacy for the periods before and during the pandemic were collected. Also, data on the attendance of the different hospital services before and during the pandemic were collected. Donations provided to Yaoundé Central Hospital during the pandemic were recorded in the material accounts to establish their financial value. The data were analysed using Microsoft Excel 2016. The Student t-test was used to compare the data before and during the pandemic. The significance level was set at 5%.

Ethical clearance was obtained from the Ethics Committee of the Yaoundé Central Hospital.

Supplementary information The online version of this article ([Tables/Figures](#)) contains supplementary material, which is available to authorized users.

Corresponding Author: *Charles Kouanfack*,
Faculty of Medicine and Pharmaceutical Sciences,
University of Dschang, Cameroon.
Email: charleskouanfack@yahoo.fr

RESULTS

Distribution and variation of consultations and its revenues

From March to August 2019, 89,152 consultations were made at the Yaoundé Central Hospital against 80,005 consultations over the same period in 2020, i.e. a difference of 9,147 consultations. In terms of revenue, this corresponds to 104,092,555 FCFA from March to August 2019 and 54,826,720 FCFA from March to August 2020, i.e. a difference of 49,265,835 FCFA, representing a drop of 47.33% (Table 1).

The most affected period was April 2020, where revenue fell from 18,094,935 FCFA in April 2019 to FCFA 7,226,300 in April 2020, i.e. a drop of 60.06%.

Distribution and variation of hospitalizations and its revenues

From March to August 2019, Yaoundé Central Hospital recorded 10,481 hospitalisations. From March to August 2020, 8 269 hospitalisations were recorded, a difference of 2,212 hospitalisations. In terms of revenue, this corresponds to 178,593,325 FCFA in 2019 and 116,468,650 FCFA in 2020, i.e. a difference of 62,124,675 FCFA, representing a drop of 34.79% (Table 2).

The most affected period was that of May 2020, where revenue fell from 29,051,900 FCFA in May 2019 to 15,575,750 FCFA in May 2020, i.e. a drop of 46.39%.

Distribution and variation of surgeries and its revenues

From March to August 2019, Yaoundé Central Hospital performed 1,575 surgical interventions against 1,346 interventions from March to August 2020, a difference of 229 surgical interventions. In terms of revenue, this corresponds to 84,370,613 FCFA in 2019 and 71,141,974 FCFA in 2020, i.e. a difference of 13,228,639 FCFA, representing a drop of 15.68% (Table 3).

The month of May 2020 recorded the greatest drop in intervention revenue compared to the same month of the previous year. Indeed, revenue fell from 15,442,300 FCFA to 10,970,850 FCFA, i.e. a drop of 29.77%.

Distribution and variation of medical imaging examinations and its revenues

From March to August 2019, the Yaoundé Central Hospital carried out 18,663 medical imaging examinations against 16,114 examinations from March to August 2020, i.e. a difference of 2,549 examinations. This corresponds in terms of revenue to 269,344,840 FCFA in 2019 and 172,844,788 FCFA in 2020, i.e. a difference of 96,500,052 FCFA, representing a drop of 35.83% (Table 4).

The period most affected was April 2020, when revenue fell from 40,762,122 FCFA in 2019 to 24,330,739 FCFA in 2020, i.e. a drop of 40.31%.

Distribution and variation of laboratory tests and its revenues

From March to August 2019, the Yaoundé Central Hospital carried out 45,354 laboratory examinations against 36,054 examinations over the same period in 2020, i.e. a difference of 9,300 examinations. This corresponds in terms of revenue to 238,712,790 FCFA in 2019 and 158,021,443 FCFA in 2020, i.e. a difference of 80,691,347 FCFA, representing a drop of 33.80% (Table 5).

The month of April recorded the greatest variation, with revenue falling from 41 710 595 FCFA in 2019 to 22 399 160 FCFA in 2020, i.e. a drop of 46.30%.

Distribution and variation of pharmacy revenues

From March to August 2019, the pharmacy's revenue fell from 256,410,976 FCFA to 189,467,139 FCFA over the same period in 2020, i.e. a difference of 66,943,837 FCFA, representing a drop of 26.11%. The month of August 2020 recorded the largest drop in revenue, i.e. 45.98% (Table 6).

Overall, revenues from consultations, hospitalisations, imaging, laboratory and pharmacy were significantly higher in 2019 than in 2020 as shown in Table 7.

Evaluation of the cost of grants received by Yaoundé Central Hospital during the pandemic at COVID19

On 07 August and 16 October 2020, the Ministry of Health of Cameroon awarded the Yaoundé Central Hospital two grants of CFAF 214,999,000 and CFAF 823,999,500 respectively, for the rehabilitation of

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two pavilions that served as care sites for patients with COVID-19.

In addition, the hospital received donations from various associations and organisations, for a total value of 117,118,984 CFA francs. These donations were distributed as follows:

- Personal protective equipment: 38,998,501 FCFA
- Medical tools: 37,280,891 FCFA
- Pharmaceutical products: 18,886,612 FCFA
- Maintenance and sterilisation products: 10,361,531 FCFA
- Foodstuffs: 6,941,945 FCFA
- Fuel vouchers: CFAF 2,700,000
- Cleaning materials: 1,243,874 FCFA
- Office supplies: 693,230 FCFA

DISCUSSION

An average reduction of 10% in consultations was observed, with a more marked reduction in the month of April 2020 (40%). This could be explained by the fact that this period corresponded to the beginning of the pandemic in Cameroon, marked by an increase in the number of cases. Attendance at the Yaoundé Central Hospital decreased due to the fear of exposure to the virus in health facilities. This result is lower than that found in a study conducted in Senegal in 2020 by Ndiaye et al., which estimated an average decrease of 19% in consultations for the first half of 2020 compared to the first half of 2019 (6).

Our results are still superior to those found in a study conducted in Brazil in 2020 by Pagotto et al. (7). They noted that during the COVID19 pandemic, 1571 consultations were performed, while in the same period in 2019, 3907 were performed.

Similarly, the revenue from consultations fell by an average of 47%. The decrease was more pronounced in the month of April 2020. This could be explained

by the huge reduction in the number of consultations during April 2020 compared to April 2019.

We also noted an average decrease of 21% in hospital admissions during the pandemic period, compared to the same period the previous year. This decrease could be explained by the significant reduction in the capacity of the Yaoundé Central Hospital from 424 beds in 2019 to 340 beds in 2020, due to the rehabilitation of buildings in several wards. This result is lower than that found in a study conducted in Taiwan in 2004 by Chang et al (8) who reported a 23.9% decrease in outpatient care activities and a 35.2% decrease in hospitalisations during the 2003 SARS epidemic. It is still lower than a 2016 study in West Africa by Ribacke et al (9), which noted a 27.6% decrease in service use and 44.3% decrease in hospital admissions during the Ebola epidemic in West Africa.

From March to August 2020, there was an average reduction of 14% in surgical interventions at Yaoundé Central Hospital compared to the same period the previous year. This result is lower than that found in a study conducted in Iran in 2021 (10), which reported a 23.5% decrease in the total number of surgeries during the pandemic. Our results are similarly lower than those found in a study conducted in Germany in 2020 by Haffer et al (11), which noted a 49.4% decrease in the total number of trauma and orthopaedic surgeries during the pandemic.

An average reduction of 14% in the number of imaging procedures was found. This result is lower than that found in a study conducted in the United States in 2020 by Malhotra et al (12), which found an average decrease of 53.9% in the number of imaging examinations performed during the pandemic period compared to the same period the previous year. It should be noted that the decrease observed in our work was more marked in July 2020. This could be explained by the fact that the scanner was out of order during this period.

CONCLUSIONS

The COVID-19 pandemic had an overall negative effect on the revenues of the Yaounde Central Hospital. Between the two study periods, revenues from

consultations fell by 47%, those from hospitalisations fell by 35%, those from surgery fell by 15%, those from imaging examinations fell by 35%, those from the laboratory fell by 33% and those from the pharmacy fell by 26%. The hospital received donations and grants during the pandemic period. These have enabled the hospital to improve its technical facilities for better patient care. Beyond these donations and subsidies, the losses recorded could not be compensated.

INFORMATION

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Author's contributions. This work was carried out in collaboration among all authors. Author FFS helped in conceptualization, collected data, analyzed and wrote the draft of the manuscript. Author KC designed the study, performed data interpretation of results and drafted of the manuscript. Author FNM helped in conceptualization, data interpretation of results and drafted of the manuscript. Authors WSY, DCA, DA, AJ and SE did the correction and drafting of the manuscript. Author FPJ wrote the draft of the manuscript. All the authors read and approved the final draft for publication.

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TABLE 1: Distribution of consultations and its revenues.

Month	Number of consultations (2019)	Number of consultations (2020)	Revenues 2019 (FCFA)	Revenues 2020 (FCFA)	Percentage decline in revenues (%)
March	17,157	18,685	18,026,400	11,853,500	34.24
April	16,745	9,931	18,094,935	7,226,300	60.06
May	13,572	9,993	16,716,620	7,471,800	55.30
June	16,122	12,471	16,799,800	9,072,300	46.00
July	12,554	14,005	17,720,400	9,390,970	47.00
August	13,002	14,920	16,734,400	9,811,850	41.37
Total	89,152	80,005	104,092,555	54,826,720	47.33

TABLE 2: Distribution of hospitalizations and its revenues.

Month	Number of hospitalizations (2019)	Number of hospitalizations (2020)	Revenues 2019 (FCFA)	Revenues 2020 (FCFA)	Percentage decline in revenues (%)
March	1,975	1,649	31,158,825	27,159,750	12.83
April	1,823	1,260	28,752,150	16,912,350	41.18
May	1,687	1,074	29,051,900	15,575,750	46.39
June	1,515	1,332	27,723,200	18,336,500	33.86
July	1,239	1,511	31,165,800	19,571,025	37.20
August	2,242	1,443	30,741,450	18,913,275	38.48
Total	10,481	8,269	178 593 325	116,468,650	34.79

TABLE 3: Distribution of surgical interventions and its revenues.

Month	Number of surgeries (2019)	Number of surgeries (2020)	Revenues 2019 (FCFA)	Revenues 2020 (FCFA)	Percentage decline in revenues (%)
March	233	262	13,857,225	13,815,135	0.30
April	296	200	15,442,300	10,970,850	28.96
May	300	166	13,231,950	9,292,801	29.77
June	232	226	13 164 150	11,737,588	10.84
July	200	248	15,126,550	11,198,675	25.97
August	314	244	13,548,438	14,126,925	---
Total	1,575	1,346	84,370,613	71,141,974	15.68

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TABLE 4: Distribution of imaging examinations and its revenues.

Month	Number of exams (2019)	Number of exams (2020)	Revenues 2019 (FCFA)	Revenues 2020 (FCFA)	Percentage decline in revenues (%)
March	2,903	5,825	45,749,017	35,042,007	23.40
April	3,195	2,140	40,762,122	24,330,739	40.31
May	3,167	1,824	43,802,107	26,388,381	39.76
June	2,898	2,234	43,231,599	28,213,563	34.74
July	3,582	2016	48,772,485	29,758,976	38.98
August	2,918	2,075	47,027,510	29,111,122	38.10
Total	18,663	16,114	269,344,840	172,844,788	35.83

TABLE 5: Distribution of laboratory tests and its revenues.

Month	Laboratory examinations (2019)	Laboratory examinations (2020)	Revenues 2019 (FCFA)	Revenues 2020 (FCFA)	Percentage decline in revenues (%)
March	8,123	7,271	43,747,385	32,401,383	25.94
April	8,025	6,027	41,710,595	22,399,160	46.30
May	8,312	5,843	42,378,855	25,423,430	40.01
June	7,065	5,896	40,068,645	24,617,470	38.56
July	7,319	5,720	40,113,460	25,167,850	37.26
August	6,510	5,297	30,693,850	28,012,150	8.74
Total	45,354	36,054	238,712,790	158,021,443	33.80

TABLE 6: Distribution of pharmacy revenues.

Month	Pharmacy revenues 2019 (FCFA)	Pharmacy revenues 2020 (FCFA)	Percentage decline in revenues (%)
March	37,240,709	34,686,706	6.86
April	33,334,015	33,897,461	---
May	42,644,643	33,885,055	20.54
June	50,647,727	32,463,749	35.90
July	43,383,172	27,979,750	35.51
August	49,160,710	26,554,418	45.98
Total	256,410,976	189,467,139	26.11

TABLE 7: Comparison of the different revenues between 2019 and 2020.

	Mean difference	95% CI		t-test	DOF	p
Consultations 2019 – 2020	8210973	6442833.17	9979111.83	11.94	5	0.00
Hospitalizations 2019 – 2020	10354113	6811155.68	13897069.32	7.51	5	0.00
Surgical Procedure 2020 – 2020	2204773	-101327.28	4510873.62	2.46	5	0.06
Imaging 2019 - 2020	16083342	12974573.77	19192110.23	13.30	5	0.00
Laboratory 2019 – 2020	13 448558	7270793.87	19626321.79	5.60	5	0.00
Pharmacy 2019 - 2020	11157306	1589298.05	20725314.29	3.00	5	0.03