

Incidence of Revenue Generated by the Sale of Drugs on Overall Hospital Revenue, Case of the Kabondo General Reference Hospital in Kisangani, Congo (DRC)

Raymond Assani Ramazani¹, and Bwanandeke Tshite Colette²

¹ISTM/KISANGANI, Congo

²Higher Institute of Medical Technical of Kisangani
raymondassani@gmail.com

Abstract

The study looked at the impact of revenue generated by the sale of drugs on the overall revenue of a public hospital, the case of the Kabondo General Reference Hospital from 2018 to 2020. The objectives were to determine the sources of financing of the Kabondo General Reference Hospital and to identify the impact of revenue generated by the sale of medicines on the overall revenue of this health establishment. We opted for an inductive approach based on documentary analysis and supported by the linear correlation technique, which essentially concerned the hospital's overall revenue, from which we identified the impact of revenue generated by the sale of drugs. The main sources of funding for the Kabondo General Reference Hospital include: medical services (US\$227,006.47), sale of drugs (US\$68,323.04), operating subsidy (US\$56,358.40) and other income (US\$22,584.92). The revenue impact of drug sales at Kabondo General Referral Hospital from 2018 to 2020 is 18.3%. The financing of the hospital is either internal or external and the functioning of the Kabondo General Reference Hospital depends mainly on internal financing, as state subsidies and partner support are not significant. The sale of medicines is the second source of internal funding for the hospital.

KEYWORDS: Incidence, Revenue, Sale of medicines, Overall revenue, Public hospital.

1. Introduction

In every country in the world without exception, the resources made available to a company must be managed in an optimal way. This is also true of a hospital which, nowadays, is managed like a specific company because its objective is not to make a profit.

The proper functioning of all health facilities depends on the availability of human, financial and material resources. For Debeaupuis (2004), the hospital therefore functions like a business: a large part of the funds that keep it going comes from its activity, and it pays its own staff and suppliers. But it is a rather special enterprise, which has no control over its tariffs (the Ministry of Health sets them), nor over the salaries of its employees (most of them have the status of civil servants: their remuneration and their advancement depend on the civil service scales).

With regard to health policies in the Democratic Republic of Congo, various texts regulate the activities and management of hospital structures, in particular the « Recueil des normes de la Zone de Santé » published in 2006 by the Ministry of Public Health.

Thus, by choosing the theme "Impact of revenue generated by the sale of medicines on the overall revenue of the hospital, the case of the General Reference Hospital of Kabondo", we want to raise the difficulties that arise at the General Reference Hospital of Kabondo during the preparation of the budget and the control of its execution in relation to the budgetary forecasts.

In a world where every Congolese franc spent in one department is a Congolese franc that will be missed elsewhere, it is essential to understand where the money that keeps the hospitals running comes from and how it is managed. In concrete terms, each time a patient is treated, the hospital draws up an invoice that depends on the procedures performed, the length of stay, the reasons for hospitalization, etc.

In France, according to the Panorama 2019 of health care institutions, in 2017, the Health Insurance represented 77% of the revenue recorded in the main budget of French public hospitals: 54 billion euros out of 69.7%. Supplementary health insurance and third-party payment, paid directly by patients, accounted for only 8% of the total 2. (Renaud, 2020).

Given the enormous financial difficulties related to the health crisis caused by the Coronavirus pandemic that the Democratic Republic of Congo in general and the General Reference Hospital of Kabondo in particular are currently experiencing, it is rather rare to find a subject that has never been the subject of a study, research, or even a previous publication.

In Senegal at the Grand Yoff General Hospital, Pouyé (2010), generic essential drugs sold in IB pharmacies accounted for a total of 30-50% of overall budgeted revenue. These depots, through the profits from the sale of medicines, contribute significantly to hospital revenues.

In Benin, specifically at the Parakou General Hospital in the Pobè Health Zone, Aymar (2011), in his study on the analysis of the budgetary management of a public health facility aimed to analyze the sources of financing of this health facility and came to the conclusion that revenue from the sale of medicines represented 38% of total revenue compared to 60% of staff expenses.

In the Democratic Republic of Congo, in the province of North Kivu, Paluku (2006), in his study on self-financing and its necessity within a health institution: the case of the C.B.C.A./Butembo Hospital Center, found that the pharmacy contributes the highest proportion to the revenue generated. It is followed by the laboratory service during the period from 2001 to 2005, respectively of 227,660.57 USD and 61,820.16 USD, i.e. rates of 54.17% and 14.71% respectively.

In Kisangani, in the Province of Tshopo, Kitoko Etefa J.C, in his study on the evaluation of a health facility applying self-financing for its operation, the case of the General Hospital of Reference of Kabondo from 2016 to 2018, aimed to identify the sources of funding of the General Hospital of Reference of Kabondo and analyze how the funding of this health facility is allocated. In conclusion, it found that self-financing revenues amounted to USD 691,463.51 and that revenues related to medical services allowed for a total of USD 505,885.47 or 73.2% Kitoko (2019)

It is in this difficult environment that we propose to contribute our thoughts to the search for solutions to improve the mechanisms for maximizing revenues and financial management of the Kabondo General Reference Hospital, which, all in all, remains a figurehead of the health system in Kisangani.

Developing countries are experiencing an increasingly precarious health situation and have long suffered and continue to suffer from poor quality health care. While geographical, environmental, and economic factors (droughts or floods, low economic incomes, overpopulation, falling export prices, the global financial crisis, etc.) partly explain this state of affairs, other reasons come into play, involving the responsibility of governments as well as the managers of health facilities Mouchet and Van Nitsen (2000).

Around the world, hospitals are generally financed by the state, by health organizations (for-profit or not-for-profit), by health insurance when it exists, or with the help of charitable organizations, including charitable donations. In France, public hospital accounts stabilized in 2013, with a "moderate" deficit of around 70 million euros (Cabiedes and Guillén 1999)

In China, after forcing hospitals to be self-financing, the government has to reinject public money to care for the less fortunate. Since the end of the 1980s, the State's participation in hospital financing has fallen from 100 to 15%. Up to 50% of hospital revenues are now provided by the sale of drugs. This quasi-privatization of the public hospital has opened the door to abuses and corruption: over-equipment, over-consumption of tests and drugs, creation of so-called "luxury" beds (Wen and Lemay, 2002).

In the Democratic Republic of Congo, health financing is based on three sources: the state budget, external financing and user fees, usually called "community financing. This is actually the payment of care by households. However, the historical evolution of these mechanisms has led to a worrying specificity in relation to the mission assigned to any health system vis-à-vis its population. This situation raises the issue of effectiveness, efficiency and equity in the financing of health care in this country (Makamba,2004)

The development of the General Reference Hospital requires significant financial resources, because within a Health Zone, the GRH is the most important and most expensive structure. The sources of funding for the General Reference Hospital are fourfold: the government budget allocation, external funding (from donors), community contributions and private sector resources Ministry of Public Health/DRC (2006).

Cost recovery for health care is a principle enshrined in national policy. Free care is exceptional. The preferred pricing method in hospitals is the flat rate. Fee-for-service pricing is recommended for medical and nursing procedures (Ministry of Public Health/DRC, 2010).

In light of the above, a few concerns need to be addressed:

- What is the incidence of revenue generated by the sale of drugs on the overall revenue of this health facility?
- What are the sources of funding for the Kabondo General Reference Hospital?

In undertaking this study, we set ourselves the following objectives:

- to identify the incidence of revenues generated by the sale of drugs on the overall revenues of this health facility;
- to determine the sources of financing for the Kabondo General Reference Hospital.

A hospital that is self-financing ensures its own survival, and consequently, its development and autonomy. The choice of this subject was motivated by the importance and the necessity of self-financing in the perspective of maximizing revenues, which should be informed and reminded to those responsible for managing the health institution.

The realization of a study like this one is not without importance. Indeed, the interest in our study is threefold:

From the theoretical point of view, the realization of this study allows us to deepen our knowledge on the self-financing of the hospital in general, and especially on the maximization of the receipts.

From a practical point of view, the results of this study will enable the management team of the Kabondo Health Zone in general, and the Kabondo General Reference Hospital in particular, to strengthen mechanisms for maximizing their own revenues, sources of self-financing in order to ensure the proper functioning of the hospital. Thus, management administrators should have accurate information that is close to reality. This information will enable them to make an objective analysis of the level of execution of their budget in terms of revenue.

From a scientific point of view, since studies on the impact of revenue generated by the sale of medicines in health establishments in Kisangani are almost non-existent, we intend to make our contribution by providing other researchers with current data useful for their bibliographic references.

2. Methodology

2.1 Field of research

We chose the Kabondo General Reference Hospital as our field of research. Indeed, the Kabondo General Reference Hospital is located in the Kabondo Health Zone and is established in the Makiso commune, on Avenue Mabrouck, in the Artisanal district of Kisangani, the capital of Tshopo Province.

2.2 Population and Sample

Based on the objectives we set for ourselves in this study, our population consisted of all revenues generated by the Kabondo General Reference Hospital from 2018 to 2020.

Sampling consists of choosing a limited number of individuals, objects where the conclusion applicable to the entire population within which the choice was made.

It is important for a researcher to work with the entire population. However, due to time constraints, we opted for a purposive sample insofar as we drew it thoughtfully in accordance with the objectives assigned to this study.

For our purposes, the study sample consisted of all revenues generated by the sale of drugs as well as the overall revenues realized by the Kabondo General Reference Hospital during the period 2018-2020.

2.3 Type of Study

For this study, we opted for the inductive method, which starts from the specific facts to the global facts. The starting point is observation and experimentation with the facts.

The inductive method is the one that starts from the particular, i.e. the revenues generated by the sale of drugs in the hospital, to arrive at the general. It consists in analyzing the facts before synthesizing them. It requires a serious and respectful examination of the text, before engaging in commentary, reflection, discussion on its understanding, and leading to a commitment to practice what has been understood.

We also used the comparative method, which allowed us to compare the revenue generated by the sale of drugs to the overall revenue generated by the hospital.

All these methods used are supported by the techniques to achieve the objectives assigned by the study.

2.4 Data Collection Techniques

Techniques are scientific procedures used at different phases or stages of a scientific investigation. For this study, we used a literature review.

Based on the documentary analysis, we consulted the accounting documents in the hospital's financial department; we also consulted various accounting documents, literary journals, and memoirs relating to the organization's cash flow and budget management.

We also consulted various accounting documents, literary journals, and memoirs related to the organization's cash flow and budget management. We also consulted the forecasted statements on which all revenues realized by the Kabondo General Reference Hospital during the period of our study were recorded.

2.5 Determination of Study Variables

The variables sought by this study include revenues generated by the sale of medicines and overall revenues realized during the study period.

For this study, the overall revenues from 2018 to 2020 are the dependent variable, which is also referred to as the endogenous variable (Y), while the revenues generated in the sale of medicines are the independent or exogenous variable (X).

2.6 Data analysis

The information and data collected at various stages are put into a usable form. The figures we collected have been grouped in tables for statistical analysis.

As for our study, the question here is to determine the correlation existing between the overall revenue and the revenue generated by the sale of drugs at the Kabondo General Reference Hospital during the study period from 2018 to 2020.

In the economic analysis of variables, the correlation between these two variables can be represented graphically by a correlation or scatter plot. On the y-axis, Y, is the value of the dependent variable (the overall revenue generated from 2018 to 2020), and on the x-axis, X, is the corresponding value of the independent variable or characteristic (the revenue generated by the sale of the drugs). If there is an association, changes in Y will coincide with changes in X.

This relationship can also be expressed by determining a correlation coefficient "r", which is a measure of the degree of inter-variability of the dependent variable with the independent variable. This correlation coefficient is between +1 and -1.

To analyze the data under study, we used the correlation method. The correlation method is carried out on the basis of the least square technique using the following formulas: $Y = \alpha x + b$ (the function that determines the regression curve)

The function $Y = ax + b$ is determined after calculating the values of the explanatory parameters of the independent variable (X) which are a and b whose formulas below are highlighted:

$$- a = \frac{\sum XY}{\sum X^2}$$

$$- b = \bar{y} - a\bar{x}$$

a and b are parameters that identify the endogenous and exogenous variables.

Finally, we will identify the correlation between the overall revenue realized during the period from 2018 to 2020 and the revenue generated by the sale of drugs, which leads to the determination of the correlation coefficient.

$$r = \frac{\sum XY}{\sqrt{\sum X^2 \cdot \sum Y^2}}$$

With :

- r = correlation coefficient ;
- $\sum XY$ = Sum of X and Y ;
- $\sum X^2$ = Sum of X^2 ;
- $\sum Y^2$ = Sum of Y^2 .

3. Results

3.1 Presentation of the hospital's sources of financing from 2018 to 2020

In a hospital, the sources of funding are mainly medical service revenues, drug sales revenues, operating grants and other revenues, etc.

Table 1. Presentation of overall revenues from 2018 to 2020 (in US Dollars)

Categories of revenues	2018	2019	2020	Total
Medical Services	110 794,17	54 951,25	61 261,05	227 006,47
Operating subsidy	0,00	23 829,00	32 529,40	56 358,40
Sale of drugs	53 607,14	904,29	13 811,61	68 323,03
Other revenues	5 672,12	7 066,58	9 846,22	22 584,92
Total	170 073,43	86 751,12	117 448,28	374 272,82

From this table, it appears that the total revenue realized by the Kabondo General Reference Hospital from 2018 to 2020 amounts to US\$374,272.82 and that medical services had produced a high amount of US\$227,006.47, followed by the sale of drugs, US\$68,323.03 and operating subsidies of US\$56,358.40.

In the following, we present the different revenues generated by the hospital in detail.

3.2 Medical Services Revenue

Table 2. Presentation of Medical Services Revenue from 2018 to 2020 (in US dollars)

Months	Medical Services			Total
	2018	2019	2020	
January	17 984,62	0,00	0,00	17 984,62
February	12 984,48	3 510,48	4 290,69	20 785,65
March	8 561,68	3 570,79	4 251,39	16 383,86
April	28 560,52	6 517,23	7 450,49	42 528,24
May	14 097,23	6 638,79	6 731,04	27 467,06
June	10 187,56	3 871,06	4 515,84	18 574,46
July	1 807,31	27 102,14	29 863,80	58 773,25
August	6 852,80	3 740,76	4 157,80	14 751,36
September	5 433,13	0,00	0,00	5 433,13
October	2 403,65	0,00	0,00	2 403,65
November	380,37	0,00	0,00	380,37
December	1 540,82	0,00	0,00	1 540,82
Total	110 794,17	54 951,25	61 261,05	227 006,47

From this table, it can be seen that the total revenue from medical services during the year from 2018 to 2020 amounted to US\$ 227,006.47. These revenues have been fluctuating and the year 2018 had recorded a higher amount of US\$ 110,794.17, followed by the year 2019 of US\$ 61,261.05, while the year 2018 had recorded a low amount of revenues related to medical services of US\$ 54,951.25.

3.3 Operating Subsidy Revenue

Table 3. Presentation of operating subsidy revenues from 2018 to 2020 (in US dollars)

Months	Operating Subsidy			Total
	2018	2019	2020	
January	0,00	0,00	0,00	0,00
February	0,00	0,00	0,00	0,00
March	0,00	0,00	9 164,40	9 164,40
April	0,00	3 324,00	0,00	3 324,00
May	0,00	0,00	4 385,00	4 385,00
June	0,00	5 175,00	4 400,00	9 575,00
July	0,00	0,00	0,00	0,00
August	0,00	5 992,00	4 540,00	10 532,00
September	0,00	0,00	2 220,00	2 220,00
October	0,00	6 409,00	3 250,00	9 659,00
November	0,00	2 929,00	2 120,00	5 049,00
December	0,00	0,00	2 450,00	2 450,00
Total	0,00	23 829,00	32 529,40	56 358,40

The data recorded in this table tells us that the total operating subsidy revenue during the period of 2018 to 2020 was US\$56,358.40. These revenues have been increasing and the year 2020 had more operating subsidy revenues of US\$32,529.40, followed by the year 2019 at US\$23,829.00. It should be noted that 2018 had recorded nothing in operating subsidy.

3.4 Revenue from Drug Sales

Table 4. Presentation of revenue from drug sales from 2018 to 2020 (in US dollars)

Months	Sale of drugs			Total
	2018	2019	2020	
January	4 665,78	27,53	212,84	4 906,15
February	4 165,25	25,79	83,00	4 274,04
March	3 003,47	36,81	221,50	3 261,78
April	5 168,56	51,34	478,94	5 698,84
May	4 296,13	54,09	1 051,65	5 401,87
June	4 758,06	39,66	1 899,18	6 696,90
July	4 293,71	74,91	2 409,09	6 777,71
August	5 223,57	50,22	1 606,60	6 880,39
September	4 127,54	91,16	1 869,23	6 087,93
October	4 342,91	130,31	1 783,83	6 257,05
November	4 749,69	160,78	1 306,40	6 216,87
December	4 812,47	161,69	889,35	5 863,51
Total	53 607,14	904,29	13 811,61	68 323,04

The table shows that the sale of drugs generated a total of US\$68,323.04 in revenue from 2018 to 2020. These revenues have been fluctuating, with 2018 recording a high amount of US\$53,607.14, followed by 2020 at US\$13,811.61 and 2019 at US\$904.29.

3.5 Other Revenues

Table 5. Presentation of other revenues from 2018 to 2020 (in US dollars)

Months	Other Revenues			Total
	2018	2019	2020	
January	1 604,00	0,00	46,56	1 650,56
February	1 447,66	0,00	78,44	1 526,10
March	108,00	691,58	6 032,00	6 831,58
April	268,00	0,00	64,71	332,71
May	913,25	0,00	109,12	1 022,37
June	154,24	4 375,00	20,00	4 549,24
July	258,76	0,00	45,29	304,05
August	307,94	0,00	675,00	982,94
September	183,09	2 000,00	635,00	2 818,09
October	184,41	0,00	1 517,50	1 701,91

November	102,41	0,00	590,10	692,51
December	140,36	0,00	32,50	172,86
Total	5 672,12	7 066,58	9 846,22	22 584,92

The contents of this table reveal that the other revenues recorded from 2018 to 2020 amounted to US\$22,584.92. These revenues had evolved in a seesaw manner and that the year 2020 produced more than the other years, i.e., US\$9,846.22, followed by the year 2019, i.e., US\$7,066.58, and the year 2018, i.e., US\$5,672.12.

It should be noted that the overall revenue generated by the Kabondo General Reference Hospital from 2018 to 2020, includes revenue from the sale of drugs, medical services, operating subsidy, other revenues, and amounts to US\$374,272.82.

3.6 Incidence of Drug Revenues on Overall Revenues

Table 6. Incidence of Drug Revenues on Overall Revenues

Designation	Amount	Incidence (%)
Sales of Drug	68 323,04	18,3
Overall Revenue	374 272,82	100,0

This table shows that the revenue generated by drug sales amounted to US\$68,323.04 out of a total revenue generated from 2018 to 2020 of US\$374,272.82; this makes an impact of 18.3%.

3.7 Economic Analysis of Variables

We describe the correlation between the revenues generated by the sale of medicines and the overall revenues (from the sale of medicines, medical services, operating subsidies, other revenues). Therefore, we use the correlation method that allows us to identify the relationship or better the impact, the proportion of drug sales revenue to overall revenue, during the study period from 2018 to 2020.

The economic analysis consists of determining the endogenous variable and the exogenous variable through the determination of the correlation coefficient based on the ordinary least squares method. As noted above, the endogenous variable (Y) represents the overall revenue generated and the exogenous variable (X) represents the revenue generated by the sale of drugs at the Kabondo General Reference Hospital during the period 2018 to 2020:

Table 7. Determination of the Correlation Coefficient (r) using the ordinary least square method

x	y	X	Y	XY	X²	Y²
53 607,14	170 073,41	30832,79	45315,81	1397212853,41	950660939,18	2053522635,96
904,29	86 751,12	-21870,05	-38006,48	831203617,92	478299087,00	1444492521,99
13 811,61	117 448,28	-8962,74	-7309,31	65511445,11	80330708,31	53426012,67
68 323,04	374 272,81	0	0	2293927916,44	1509290734,49	3551441170,62

Source: Our data from Tables 1, 2, 3 and 4.

$$\bar{x} = 22774,35$$

$$\bar{y} = 124757,60$$

The parameters a and b are obtained by the formulas below:

$$a = \frac{\sum xy}{\sum x^2} = 0,5198$$

$$b = \bar{y} - a\bar{x} = 112919,4928$$

Having found the values of a and b , we can easily determine the correlation coefficient by the formula below:

$$r = \frac{\sum xy}{\sqrt{\sum x^2 \sum y^2}} = 1,6626$$

At the end of our analyses, it appears that the correlation coefficient is positive (1.6626), i.e. greater than 1. Since the correlation coefficient is positive, this means that there is a strong correlation between the revenue generated by the sale of drugs and the overall revenue generated by the hospital during the study period. In other words, we infer that the revenue generated by the sale of drugs had evolved in the same direction, i.e. the revenue generated by the sale of drugs had evolved proportionally to the overall revenue generated by the hospital.

In the graph below, we show the regression curve showing the hospital's overall revenue from 2018 to 2020 and the revenue from the sale of medicines, considering the function: $Y = ax + b$, where we have $Y = 0.5198x + 112919.4928$.

$$\text{For } X_1 = 53,607.14 \text{ then } Y = 0.5198 (53,607.14) + 112919.4928 = 140,784.4841$$

$$\text{For } X_2 = 904.29 \text{ then } Y = 0.5198 (904.29) + 112919.4928 = 113\,389.5427$$

$$\text{For } X_3 = 13,811.61 \text{ then } Y = 0.5198 (13,811.61) + 112919.4928 = 120,098.7676.$$

Below, we present the graph that represents the regression curve that shows the correlation between the revenue generated by the sale of drugs on the one hand and the overall revenue of the General Hospital of Reference Kabondo from 2018 to 2020.

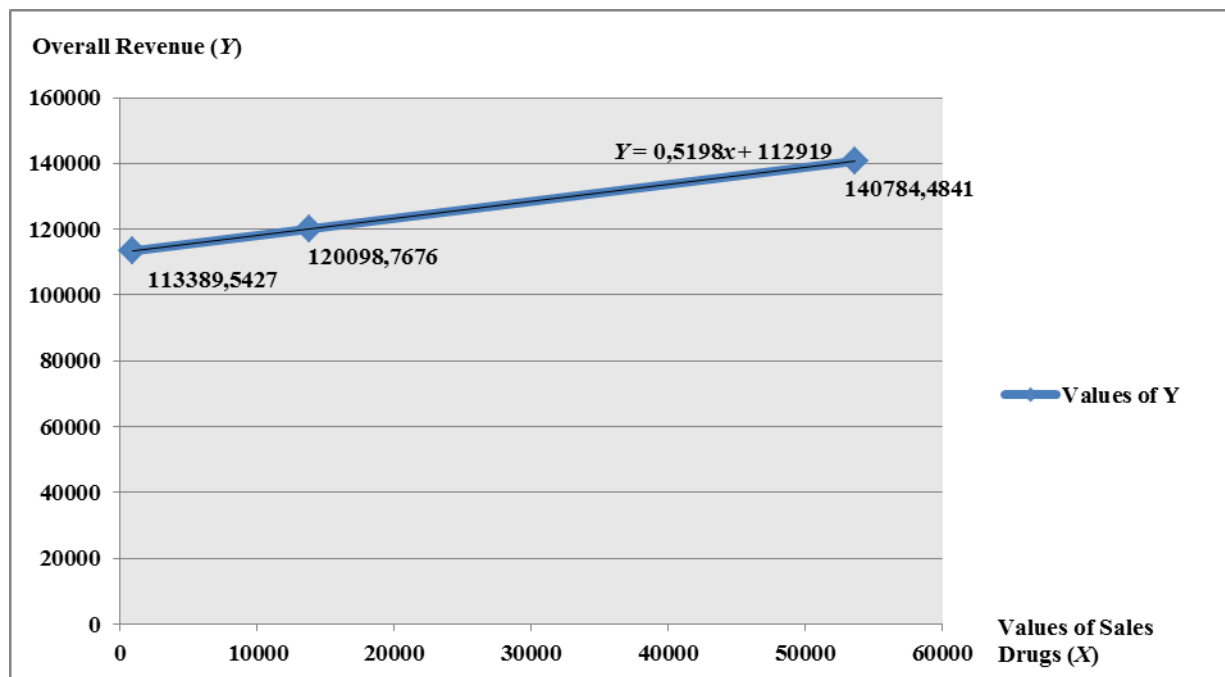


Figure 1: Regression line

Looking at this graph, it can be seen that the revenue generated by the sale of drugs had evolved proportionally with the overall revenue of the Hospital during the study period, i.e. from 2018 to 2020. As we can see in this figure, the regression line is perpendicular to the slope.

4. Discussion

4.1 Overall Revenue

It should be noted that the overall revenue generated by the Kabondo General Reference Hospital of from 2018 to 2020, i.e., the total revenue from the sale of drugs, medical services, operating subsidies, and other revenue, amounted to US\$374,272.82.

According to Hounkpati (2007), the Tokoin University Hospital's own revenues are generated by the various hospital activities. In fact, the revenue forecasts are made by the provision of services, such as outpatient consultations, hospitalizations, electrodiagnostic and laboratory examinations, and especially the morgue, in short, self-financing, which becomes the only source of income from patients, solvent clients. The revenue generated by hospitalization fees represents a significant percentage of the total revenue, i.e. 51.37%. For Aymar (2011), in his study on the budgetary analysis of a public health facility in Benin: the case of the Pobè Zone Hospital, the revenue-generating activities of the hospital are the sale of medicines, medical services and ancillary products.

In the case of the Kabondo General Reference Hospital, self-financing is ensured by the revenue generated by the sale of medicines, printed materials and medical services, i.e., the services offered to patients. There is therefore no private financing.

In a study conducted at the Makiso General Reference Hospital, Shambua (2018) showed that the revenue generated from flat rate pricing amounted to 706,501,460.00 CDF from 2015 to 2017.

We can explain the fluctuations in revenue by the absence of an effective policy of revenue maximization by the hospital. In fact, revenues did not increase as we would expect when it comes to effective and efficient financial management. However, it should be pointed out that the financial support that the Kabondo General Reference Hospital received from the Belgian NGO ENABEL would explain most of the drop in the hospital's own revenue by the fact that the Belgian partner undertook to take charge of part of the hospital's budget in order to promote the population's access to care.

4.2 Income from medical services

During the period from 2018 to 2020, revenue from medical services amounted to US\$ 227,006.47. It is worth noting that these revenues had been fluctuating with the year 2018 recording a higher amount of US\$110,794.17, followed by the year 2019 of US\$61,261.05, while the year 2018 recorded a low amount of medical benefit revenues of US\$54,951.25.

According to Renaud (2020), the hospital thus operates like a business: a large part of the funds that keep it going comes from its activity, and it pays its own staff and suppliers. But it is a rather special enterprise, which has no control over its tariffs (the Ministry of Health sets them), nor over the salaries of its employees (most of them have the status of civil servants: their remuneration and their advancement depend on the civil service pay scales).

Medical services are an important source of financing among many others in the operation of the hospital. For this reason, the hospital authorities must implement a good pricing policy that not only promotes patient access to care, but also provides the hospital with considerable financial resources to deal with the multiple budgetary constraints.

In his study conducted in the same health facility from 2016 to 2018, Kitoko (2019) found that revenue from medical benefits totaled US\$505,885.47.

According to Hounkpati (2007), the financing of the Tokoin University Hospital in Lomé since its creation has been provided by the State, the only financial backer. In the government's annual budget, the State subsidizes it... The operating subsidy allows the UHC to balance its budget. The balancing subsidy should in principle correspond to the budget deficit at the end of the year. But what we found is that there is no clear and reliable management balance sheet.

In addition, Aymar (2011) in his study on "Analysis of the budgetary management of a public health facility in Benin: the case of the Pobè Zone Hospital in Benin" indicates that the Pobè Zone Hospital did not have enough resources to meet its expenses, and was therefore financially suffocated. There are also certain forecasts that are not always realized over the entire study period, except for 2010 when there is a high rate of realization.

We want to demonstrate in this study that it is not a question of analyzing the degree of realization of the revenues, but rather the evolution of the maximization of the revenues to allow the good functioning of the hospital.

In spite of the insufficiency of these resources coming from the State as well as from the various partners, it is essential for the hospital to manage them as well as possible in order to

be able to face the multiple operating expenses. For the Kabondo General Reference Hospital, self-financing is ensured by the revenue generated by the sale of medicines, printed materials and medical services, i.e. services offered to patients. There is therefore no private financing. However, it should be noted that the support received by this hospital from the Belgian NGO ENABEL, some of the hospital's own sources of funding have decreased, in return for funding from partners. This was the case in 2020, which recorded less revenue than the other years studied.

4.3 Operating Grant Revenue

We noted in this study that the total operating grant revenue during the period from 2018 to 2020 was US\$56,358.40. In contrast to medical benefit revenue, operating grant revenue had been trending upward and that the year 2020 had recorded more operating grant revenue at US\$32,529.40, followed by the year 2019 at US\$23,829.00. It should be noted that the year 2018 had recorded nothing in terms of operating subsidy.

According to Aymar (2011), the subsidies expected from the State and partners by the Pobè Zone Hospital in Benin did not arrive at the right time. In most cases, the hospital did not receive the funds until after the first quarter of the fiscal year. It should also be noted that even if these grants reach the hospital, they are considerably reduced. This causes enormous difficulties for the hospital authorities. It should be noted that these partners are working to help the village health units more.

As you can see, the functioning of a hospital depends on the financial resources made available to it. In addition to the resources generated within the health establishment, it is also necessary to count on the support or better the support of partners and the public authorities.

Generally speaking, the public hospital is financed by the public treasury. But in practice, how are these sums paid to it? And how does the management of a health establishment differ from that of a company? Answers from the field, with managers who are used to putting their hands in the public purse 2 (Renaud, 2020).

In this case, the Kabondo General Reference Hospital receives financial and technical support from partners like other health structures, such as the Belgian NGO ENABEL, SANRU and APEC.

It should also be noted that ENABEL's financial support is not regular and permanent, but is spread out over several months during the year. This situation results in a shortfall for the hospital, which operates essentially on its own funds.

However, it is impossible to talk about the state subsidy granted for the operation of the hospital, given that we have been experiencing major health and economic crises throughout the world since the advent of Covid-19, and the Kabondo General Reference Hospital is no exception.

4.4 Revenue from the Sale of Drug

This study shows that during the period from 2018 to 2020, the sale of drugs generated revenues of US\$68,323.04. These revenues had evolved in a sawtooth pattern and that the year 2018 had recorded a large proportion amounting to US\$ 53,607.14, followed by the year 2020 or US\$ 13,811.61 and the year 2019 or US\$ 904.29.

Often the last two expenses are compressed into one category, dedicated to the operation of the Hospital.

This result is far lower than that found by Kitoko (2019) who showed that the revenue generated from the sale of drugs totaled US\$183,377.67 during the period 2016 to 2018.

Our study coincides with the period when the Kabondo General Reference Hospital received financial support and a grant from its partners. Considering the case of the Belgian partner, i.e., the NGO ENABEL, it is stipulated in the contract that the partnership is partial, i.e., that part of the resources and expenses are covered by the partner in order to facilitate access to care for the population.

A study conducted in Senegal at the Grand Yoff General Hospital revealed that generic essential drugs sold in IB pharmacies accounted for a total of 30-50% of overall budgeted revenues. These depots, through the profits from the sale of medicines, contribute significantly to the hospital's revenue Cheikh (2010).

We note that the revenue generated by the sale of drugs represents a significant proportion in the order of revenue after medical services. Medicines sold at the hospital dispensary on medical prescription constitute a source of internal or own funding for the health establishment.

4.5 Other revenues

In this study, other income represents funding mainly from mutual health insurance companies that have signed a care contract with the Kabondo General Reference Hospital and the sale of printed materials.

During the period from 2018 to 2020, it was shown that other revenues recorded amounted to US\$22,584.92. This revenue had been fluctuating and the year 2020 produced more than the other years at US\$9,846.22, followed by the year 2019 at US\$7,066.58 and the year 2018 at US\$5,672.12.

This result is far superior to that found by Kitoko (2019) who showed that other revenues totaled US\$12,200.40 during the period from 2016 to 2018.

In the structure of revenues realized by the hospital, the sale of printed materials and mutual health insurance occupy the last rank by the fact that a large part of the costs is supported by the Belgian NGO ENABEL, which constitutes a relief of the costs of care for the benefit of patients.

In his study on the "Problems of the management of a mutual health insurance company on the accessibility to care of its members: case of the workers of the Monseigneur Grison Center of Simisimi and the Saliboko Primary School in Kisangani", Boleshe (2020) demonstrated that following the emergence of the health crisis throughout the world, many mutual health insurance companies have become unable to pay their hospital bills. This makes it difficult for the hospital to function smoothly.

We believe that the public authorities should first support the General Reference Hospital of Kabondo by granting it operating subsidies in order to promote its functioning and enable it to meet its operating expenses.

4. Conclusion

The study focused on the impact of revenue generated by the sale of drugs on the overall revenue of a public hospital, the case of the Kabondo General Reference Hospital.

Specifically, we set ourselves the following objectives : to determine the sources of financing for the General Referral Hospital of Kabondo and to identify the impact of the revenue generated by the sale of medicines on the overall revenue of this health facility.

In order to achieve these objectives and in the methodological approach used, we resorted to the inductive method supported by the linear correlation method. The study essentially concerned overall revenues, from which we identified the impact of revenues generated by the sale of drugs.

At the end of our objective-based analyses, we recorded the following results: The main sources of funding for the Kabondo General Reference Hospital are: medical services (US\$227,006.47), the sale of medicines (US\$68,323.04), the operating subsidy (US\$56,358.40) and other revenues (US\$22,584.92). The impact of revenue generated by the sale of medicines at the Kabondo General Referral Hospital from 2018 to 2020 is 18.3%.

In light of these results, we believe that the objectives assigned to this study have been achieved.

The data collected for this study are not subject to any conflict of interest between the Kabondo General Reference Hospital and the investigator, nor with respect to other authorities.

Considering that the operation of the hospital is consequential to the different sources of funding and the hospital's funding policy, we suggest:

- 1) The government: to grant regular subsidies to the hospital in order to allow it to offer quality care to the population.
- 2) The partners: Implement the clauses of the contract to allow the hospital to function normally. Spreading out the financing on a monthly basis to enable the hospital to meet its multiple expenses and supporting the hospital 100% because the hospital depends on fee-for-service, especially since the fee structure resulting from the partnership contract significantly reduces internal financing.
- 3) At the Kabondo General Reference Hospital: to apply a better policy of maximizing revenues, which allows it to function better and to meet operating expenses.

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