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Impact of self-financing on the overall funding of public hospitals in Kisangani, Democratic Republic of the Congo: Challenges and prospects

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ABSTRACT

Introduction

Financing public hospitals in the Democratic Republic of the Congo, especially in Kisangani (Tshopo Province), remains a major challenge for the provision of quality health services. Although several funding sources exist, the specific contribution of self-financing to hospital budgets has not been well documented, leaving its role in financial sustainability unclear.

Purpose

This study evaluated the role of self-financing in the overall funding of the General Reference Hospitals of Makiso, Lubunga, and Tshopo between 2020 and 2022.

Methods

A quantitative research design was adopted, using an inductive and accounting approach. Nine annual financial reports (three per hospital) for the period 2020–2022 were analysed. The general trend analysis technique and Pearson's linear correlation were used to determine the relationship between self-financing and total hospital funding.

Results

On average, self-financing accounted for 62.6% of total hospital funding. A strong positive correlation was found between self-financing and total funding (r = 0.95), indicating that self-financing significantly influenced the financial performance of the hospitals during the study period.

Conclusion

Although self-financing contributes substantially to hospital budgets, it does not guarantee financial autonomy, as public hospitals remain heavily dependent on households. This dependence places a financial burden on families and encourages overbilling. To address this, it is recommended that the government and its technical and financial partners diversify and strengthen funding mechanisms to reduce reliance on households and ensure more affordable and equitable hospital services in Kisangani. This study is one of the first empirical assessments of self-financing in Congolese public hospitals, quantifying its share in overall financing and outlining its implications for the sustainability of the health system.

INTRODUCTION

The management of public hospitals is a critical public health issue, as these institutions must balance severe budgetary constraints with the responsibility to provide quality patient care. Sound financial management ensures that limited resources are used efficiently and that funds allocated to health services reach the communities most in need (Levine, 2003). Achieving Sustainable Development Goal 3—ensuring healthy lives and promoting well-being for all—requires substantial financial investment in health systems (Ministry of Environment, Nature Conservation, Sustainable Development and Renewable Energy [MINECDDURE], 2015; Ndaya, 2022).

Globally, the lack of adequate healthcare financing contributes to major inequities. In many low- and middle-income countries, direct household payments remain the primary method of financing health services, leading to financial hardship and reduced access to care (Navarro & Lievens, 2012; Salah, 2013; Wery, 2015). In Sub-Saharan Africa, households contribute up to 80% of total health expenditures, increasing vulnerability and inequity. In contrast, higher-income countries such as France and Turkey demonstrate diversified and more equitable financing structures, characterised by stronger state contributions and lower household burdens (Directorate for Research, Studies, Evaluation and Statistics [DREES], 2022; World Bank, 2017).

In the Democratic Republic of the Congo (DRC), health financing relies on three main sources: the state budget, external donor contributions, and user fees (also referred to as community financing) (Makamba & Manunga, 2004; Ministry of Health/Public Health [MINSANTE/DRC], 2006; Manzambi et al., 2015). However, the proportion of household contributions has increased over time, particularly following the Bamako Initiative, placing a heavy financial burden on families while undermining equity and access to care (Ministry of Health/Social Affairs [MS/MP/DRC], 2008; Maotela et al., 2019).

Although several studies in Africa and beyond have highlighted the increasing reliance on household payments (Maneckou, 2015; Afouka, 2018), very few have investigated how public hospitals in urban areas of the DRC operate under such conditions. In Kisangani, the capital of Tshopo Province, public hospitals face severe financial constraints, limited external support, and increasing dependence on households. To compensate, hospitals frequently resort to overbilling for medicines and services, which restricts access to healthcare, particularly for low-income families.

This situation raises crucial questions: How do public hospitals operate without sufficient external funding? To what extent does self-financing sustain their activities? And how can financial management ensure service continuity and quality care at minimal cost?

The conceptual framework and research gap of this study are based on the principle of self-financing, defined as a hospital's capacity to generate internal resources—mainly from user fees and service charges—to meet operating expenses and maintain service delivery. Although the literature often explores the effects of self-financing on equity and access to care, there is little empirical work assessing its actual role in hospital financing in the DRC. In Kisangani, the absence of local evidence limits the ability of policymakers to design suitable financing strategies for public hospitals.

This study therefore examines the contribution of self-financing to overall hospital budgets, focusing on the General Reference Hospitals of Makiso, Lubunga, and Tshopo, in order to evaluate their financial capacity and implications for long-term sustainability.

METHODS

Study Area

The study was conducted in the General Reference Hospitals (GRHs) of Makiso, Tshopo, and Lubunga, located in Kisangani, the capital of Tshopo Province in the Democratic Republic of the Congo (DRC). These hospitals form part of the public health system and operate under the authority of the Ministry of Public Health.

Study Population and Sampling

The study population consisted of the financial archives of all public hospitals in Kisangani. From this population, simple random sampling was used to select three hospitals: GRH Makiso, GRH Lubunga, and GRH Tshopo.

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Inclusion criteria

The inclusion criteria were:

1. Availability of complete financial records for the years 2020–2022
2. Accessibility of the archives with official authorisation from hospital management

Hospitals with incomplete, missing, or inaccessible financial data for the study period were excluded. A total of nine financial reports were included—three annual reports per hospital for 2020, 2021, and 2022.

Methods and Techniques

This is a quantitative study based on an inductive and accounting approach, which enabled the extraction and processing of numerical data from financial records. The analysis focused on both internal financing (self-financing) and external funding sources to determine the proportion of self-financing in total hospital revenue.

Data Collection Procedures

Data were collected through documentary analysis in collaboration with the administrative and accounting departments of the three hospitals. Relevant documents included annual financial reports, quarterly reports, and supplementary accounting records.

Variables

The study examined two main variables:

- **Independent variable (X):** Internal financing (self-financing; revenue from user fees and service charges)
- **Dependent variable (Y):** Total financing (sum of internal and external resources)

Data Analysis

Data were entered into Microsoft Excel and processed using SPSS (version 25). Descriptive statistics were used to summarise financing trends. Pearson's correlation was applied to test the relationship between self-financing and total financing since both variables were continuous, normally distributed, and suitable for linear relationship analysis. Simple linear regression was then performed to model the predictive relationship between self-financing and total financing. The regression equation $\mathbf{Y = aX + b}$ was used to generate a fitted line, enabling analysis of financing trends across hospitals and over time (2020–2022).

Ethical Considerations

Ethical approval for this study was obtained from the Bioethics Committee of the Higher Institute of Medical Techniques of Kinshasa (Authorisation No. 055/ESU/ISTM/DG/2022). Formal permission was also obtained from the management of GRH Makiso, GRH Lubunga, and GRH Tshopo. The purpose of the research was explained to hospital authorities, and approval was granted for access to institutional archives. Although the study did not involve patient-level data, strict confidentiality was observed. All information was anonymised and used exclusively for research purposes.

RESULTS

Sources of Funding from 2020 to 2022

Table 1 presents the distribution of funding sources for the three General Referral Hospitals (HGRs) in Kisangani—Makiso, Tshopo, and Lubunga. It distinguishes between self-financing and external funding and shows the contribution of each partner or subsidy to the individual hospital budgets and to the combined total.

Table 1:
Sources of funding for three General Referral Hospitals in Kisangani

Sources of Funding	GRH Makiso (CDF / %)	GRH Tshopo (CDF / %)	GRH Lubunga (CDF / %)	Total (CDF / %)
Self-financing	929,974,041 / 68.8%	192,711,898 / 95.3%	275,762,750 / 41.0%	1,398,448,689 / 63.0%
External Financing				
ENABEL	157,437,037 / 11.6%	0 / 0%	379,295,570 / 56.5%	536,732,607 / 24.1%
UNFPA	65,999,988 / 4.9%	0 / 0%	0 / 0%	65,999,988 / 3.0%
APEC	0 / 0%	0 / 0%	1,658,250 / 0.2%	1,658,250 / 0.1%
Vodacom	0 / 0%	0 / 0%	14,485,680 / 2.6%	14,485,680 / 0.6%
Other external sources	198,599,492 / 14.7%	0 / 0%	0 / 0%	198,599,492 / 8.9%
Government subsidies	0 / 0%	9,409,485 / 4.7%	0 / 0%	9,409,485 / 0.4%
Total external financing	422,036,517 / 31.2%	9,409,485 / 4.7%	402,614,500 / 59.0%	834,060,502 / 37.0%

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Sources of Funding	GRH Makiso (CDF / %)	GRH Tshopo (CDF / %)	GRH Lubunga (CDF / %)	Total (CDF / %)
Total financing	1,352,010,558 / 100%	202,121,383 / 100%	671,202,250 / 100%	2,232,509,191 / 100%

The percentages represent the relative share of each funding source within each hospital's total budget (columns for HGR/Makiso, HGR/Tshopo, and HGR/Lubunga) or within the combined total (Total column). For example, at HGR/Makiso, self-financing of 929,974,041 CDF represents 68.8% of its total budget of 1,352,010,558 CDF.

The funding structure of Kisangani's public hospitals reveals pronounced disparities and a fragile balance between self-financing and external assistance. HGR/Tshopo relies almost entirely on household contributions (95.3%), reflecting the absence of sustainable external support. By contrast, HGR/Lubunga depends heavily on external partners (58.9%), particularly ENABEL and Vodacom, making it vulnerable to funding withdrawal. HGR/Makiso occupies an intermediate position, combining a high level of self-financing (68.8%) with diversified external support (31.2%) from ENABEL, UNFPA, and other partners.

Collectively, the three hospitals mobilise 62.6% of their resources through self-financing and 37.4% through external support and minimal state subsidies. This demonstrates the weakness of government contributions and the uneven distribution of donor funds. These findings highlight the need for context-specific financing strategies that reduce household burdens, secure sustainable partnerships, and increase public subsidies to promote equity, financial resilience, and continuity of essential services.

Incidence of Internal Financing in Overall Financing (2020–2022)

Table 2 summarises total financing for the three hospitals, distinguishing between self-financing and external sources. Self-financing is the dominant source of revenue in all hospitals, accounting for 68.8% at Makiso, 95.3% at Tshopo, and 40.6% at Lubunga, representing a combined total of 1.398 billion CDF out of 2.233 billion CDF mobilised.

External funding plays a more significant role in Makiso and Lubunga (422 million and 403 million CDF respectively), but remains minimal at Tshopo (9.4 million CDF). With an average of 62.6% of total financing coming from internal sources, the degree of reliance on self-financing varies greatly among the hospitals. Tshopo appears more financially autonomous, whereas Lubunga is considerably dependent on external actors.

These results underscore the need for tailored financial strategies that account for each facility's capacity for self-financing and the complementary value of external support.

Table 2:
Overall financing of the General Referral Hospitals of Makiso, Tshopo, and Lubunga

Type of Financing	HGR/Makiso (CDF)	HGR/Tshopo (CDF)	HGR/Lubunga (CDF)	Total (CDF)
Self-financing	929,974,041	192,711,898	275,762,750	1,398,448,689
External financing	422,036,517	9,409,485	402,614,500	834,060,502
Total	1,352,010,558	202,121,383	678,377,250	2,232,509,191
Incidence (%)	68.8	95.3	40.6	62.6

The comparison between self-financing and external financing is illustrated in **Figure 1** below, showing the impact of self-financing on total hospital funding.

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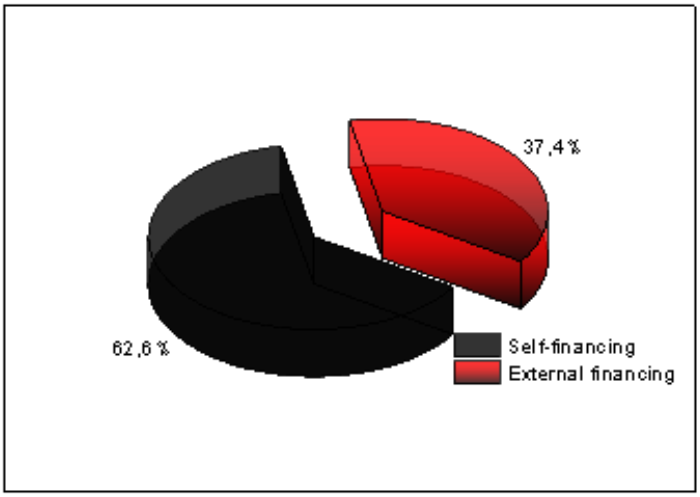
Figure 1:
Share of Self-Financing in Overall Financing (2020–2022)



Correlation Analysis Between Self-Financing and Overall Financing (2020–2022)

Correlation analysis was conducted to determine the relationship between self-financing (independent variable, X) and total financing (dependent variable, Y). Deviations from the mean, cross-products (XY), and squared deviations (X^2 and Y^2) were calculated **(Table 3)**.

Pearson's correlation coefficient (r) was estimated at **0.95**, indicating a very strong positive correlation between self-financing and total financing. This suggests that hospitals generating higher levels of internal income tend also to record higher total funding. While external funding remains complementary, the strength of this relationship positions self-financing as a key determinant of total hospital financing.

Table 3:
Correlation Analysis

X	Y	x	y	xy	x^2	y^2
929,974	1,352,010	463,825	610,232.4	283,041,042,930	215,133,630,625	372,383,582,009.76
192,711	202,121	-273,438	-539,656.6	147,562,621,390.8	74,768,339,844	291,229,245,923.56
275,762	671,202	-190,387	-70,575.6	13,436,676,757.2	36,247,209,769	4,980,915,315.36
1,398,447	2,225,333	0	0	444,040,341,078	326,149,180,238	668,593,743,248.68

Statistical Parameters

$\bar{x} = 466{,}149.0$

$\bar{y} = 741{,}777.6$

$$a = \frac{\sum xy}{\sum x^2} = 1.36$$

$$b = \bar{y} - a\bar{x} = 107{,}814.96$$

$$r = \frac{\sum xy}{\sqrt{(\sum x^2)(\sum y^2)}} = 0.90$$

DISCUSSION

Impact of Self-Financing on Overall Hospital Funding

Funding patterns in the three HGRs reveal a strong dependence on self-financing through direct patient payments. On average, self-financing accounts for 62.6% of total funding, though this varies: 68.8% at Makiso, 95.3% at Tshopo, and 40.6% at Lubunga. External contributions remain limited, especially at Tshopo. This mirrors trends in other African countries where households bear the majority of healthcare costs. In Madagascar, 84% of hospital resources come from patient payments (Afouka et al., 2018). In the DRC, households contribute nearly 40% of recurrent health expenditure, exposing them to catastrophic spending (USAID, 2023).

The COVID-19 pandemic worsened this situation, as 65% of families reported reduced access to healthcare due to income loss (UNICEF, 2021). In contrast, mixed funding systems in countries such as Algeria and Tunisia rely more on state and social security mechanisms, reducing direct payments and improving equity (World Bank, 2022). The predominance of self-financing in Kisangani reflects both forced autonomy and state disengagement, leaving hospitals vulnerable to economic shocks and fluctuations in households' purchasing capacity.

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Funding Trends

Between 2020 and 2022, although nominal funding increased in some hospitals, total resources remained insufficient to cover operating costs, infrastructure maintenance, or adequate staff remuneration. Similar constraints are reported in Senegal and Togo, where out-of-pocket expenditure is high, state allocation is limited, and insurance coverage is weak (Ly et al., 2020; Atake & Amendah, 2023).

Studies further show that funding increases alone do not improve quality of care. Efficient financial management—particularly in budgeting, expenditure monitoring, and accountability—is a decisive factor (Bazzoli et al., 2008; Singh et al., 2015).

Incidence of Self-Financing

The strong positive correlation (r = .95) indicates that higher levels of self-financing increase overall funding. However, systems dependent on direct payments face structural limitations. Evidence from China shows that excessive reliance on cost recovery may lead to overprescribing, over-investment in equipment, and reduced equity (Yip & Hsiao, 2014; Wagstaff et al., 2009).

Even in countries with stronger health systems, such as France, reductions in self-financing push hospitals to seek new revenue streams (Courtejoie & Richet, 2022). Performance-based financing (PBF) has shown promise in the DRC by linking funding to measurable performance indicators, improving quality, accountability, and efficiency (MSP-RDC & World Bank, 2019; Renmans et al., 2017).

Prospects for Self-Financing

Hospitals can improve resilience by diversifying revenue (e.g., pharmacy services, diagnostic centres, partnerships) and optimising resource management through better stock control, information systems, and cost efficiency. Strategic investment is also needed to prioritise services that enhance care quality and patient satisfaction. Such measures can improve sustainability while reducing dependence on direct patient payments.

Study Limitations

This study relied on retrospective financial records, which may be incomplete or inconsistent over time. Future research should assess long-term outcomes of diversified funding strategies, including external partnerships and innovative financing models, to support equitable and sustainable hospital systems.

CONCLUSION

This study analysed the contribution of self-financing to total hospital funding in Kisangani's three General Referral Hospitals from 2020 to 2022. Self-financing accounted for an average of 62.6% of total funding, with a strong positive correlation (r = .95) between self-financing and overall financing, confirming the study hypothesis. However, high reliance on household payments does not guarantee financial security, particularly in the absence of public subsidies and diversified revenue streams.

Hospitals should therefore strengthen financial management, diversify funding sources, and adopt performance-based financing mechanisms. Policymakers are encouraged to reinforce state investment and design equitable financing models to reduce household financial burden and support long-term sustainability.

Ethical Approval: Ethical approval for this study was obtained from the Bioethics Committee of the Higher Institute of Medical Techniques of Kinshasa (Authorisation No. 055/ESU/ISTM/DG/2022).

Conflicts of Interest: None declared.

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