

# Evaluation of beneficiary satisfaction with biomedical laboratory services in Kinshasa: A case study of prescribers of biological analyses in several general referral hospitals

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## ABSTRACT

### Introduction

Biomedical laboratories (BMLs) in Kinshasa, as elsewhere, are obligated to satisfy the beneficiaries of their services through the provision of quality services. To achieve this, they must comply with international quality standards, particularly those outlined in ISO 15189 and ISO 9001. A study of provider satisfaction was previously conducted at the Cliniques Universitaires de Kinshasa (CUK) in 2022 and at the Hôpital Général de Kinshasa in 2024. However, no evaluations have been conducted in other hospitals.

### Purpose

This study aimed to assess the satisfaction of prescribers of biomedical tests in selected general referral hospitals in Kinshasa, Democratic Republic of Congo.

### Methods

A cross-sectional, descriptive, and analytical study was conducted from December 2024 to June 2025 in five public hospitals in Kinshasa. A total of 350 prescribers were surveyed using a structured questionnaire. The association between satisfaction indicators and overall prescriber satisfaction was analysed using chi-square tests.

### Results

Among the 350 prescribers surveyed, the overall satisfaction level was 45.43%, with only 2.57% of prescribers reporting a high level of satisfaction. Four key indicators were significantly associated with satisfaction: reception at the laboratory ( $p < .001$ ), turnaround time for results ( $p < .001$ ), relevance and clarity of laboratory reports ( $p < .001$ ), and the range of tests offered ( $p < .001$ ).

### Conclusion

Prescriber satisfaction with BML services in Kinshasa is low. Regular assessments of beneficiary satisfaction and service delivery improvements – particularly in customer reception, speed of results delivery, availability of tests, and the relevance and clarity of laboratory reports – are essential. The World Health Organization (WHO) recommends that such evaluations be conducted at least once every two years (World Health Organization, 2020).

## INTRODUCTION

The biomedical laboratory (BML), a key player in diagnosis, monitoring, and medical surveillance, is obligated to provide beneficiaries with useful, clear, accurate, and reliable results within the required timeframe to ensure effective care. To satisfy and retain beneficiaries, the BML must comply with international standards, use techniques that are both effective and accurate, and employ competent staff in its routine operations. It is also important that the BML be managed by a physician or pharmacist-biologist who understands the relationship between test results and the physiological or pathological condition of patients.

Given that the needs and expectations of a company's customers are constantly influenced by environmental changes, societal trends, and competition, all modern organisations—including medical laboratories—must aim to satisfy their clients to win their loyalty. As a result, the concept of quality assurance has become a cornerstone for all modern institutions (International Organization for Standardization [ISO], 2022; Pascal & Beyerle, 2006).

Satisfaction is measured using various methods, including user complaints, company-issued questionnaires, and specific or general surveys conducted at the initiative of the organisation (Pascal & Beyerle, 2006). To retain beneficiaries, quality management—a crucial tool for laboratories—relies on customer satisfaction surveys conducted according to a predefined schedule, enabling the assessment of strengths and weaknesses and the implementation of a service improvement plan.

Although referenced in regulatory frameworks worldwide, customer satisfaction surveys remain underutilised by institutions, particularly in Africa, partly due to funding limitations. Studies on customer satisfaction with BML services conducted in the United States and Europe revealed beneficiary satisfaction rates ranging from 68% to 98% (Jones et al., 2009; Yameogo & Zabsonre, 2014). In Africa, studies have also been conducted in select countries. In Tunisia, a 2023 study reported a 51% satisfaction rate among physicians regarding BML services (Ajmi & Gazzeh, 2023). In Morocco, patient satisfaction with BML services in 2021 was estimated at 97.86% (Lakhlifi, 2021). In Burkina Faso, a review of studies on hospital care satisfaction reported rates ranging from 52.7% to 94.12% (Yameogo &

Zabsonre, 2014). In Ethiopia, a national study on patient satisfaction with BML services found a rate of 78% (Hailu et al., 2020).

In the Democratic Republic of Congo (DRC), Chabo et al. (2022) reported a 45.2% satisfaction rate among prescribing physicians in a study conducted at the University Clinics of Kinshasa (CUK). Similarly, studies by Kiyombo et al. (2022) and Tshibola et al. (2023) at CUK and the Provincial General Reference Hospital in Kinshasa revealed satisfaction rates of 48% and 30.5%, respectively (Faculty of Medicine, University of Kinshasa [UNIKIN], 2022, 2023).

The Clinical Biology Department of the University Clinics of Kinshasa regularly conducts satisfaction surveys among prescribers of biomedical analyses, who are the primary beneficiaries of its services. It was within this context that the present survey was carried out at CUK and in selected other clinical laboratories in Kinshasa.

## Objectives

### General Objective

To assess the satisfaction of prescribers of biological analyses from clinical biology laboratories in several public hospitals in Kinshasa, Democratic Republic of Congo.

### Specific Objectives

- To determine the profile of those prescribing tests.
- To determine the degree of satisfaction among prescribers.
- To identify the key indicators associated with prescriber satisfaction.

## METHODS

### Type, Period, and Study Setting

This was a cross-sectional, descriptive, and analytical study conducted from December 2024 to June 2025 in the biomedical laboratories (BML) of five public hospitals in Kinshasa, Democratic Republic of Congo (DRC). The number and selection of hospitals were based on convenience sampling. The General Reference Hospital (HGR) was selected in each of the city's four administrative districts, in addition to the University Clinics of Kinshasa (CUK).

### Study Population

The study population consisted of all physicians prescribing tests in the five HGRs (four HGRs in the city's administrative districts and the CUK).

### Sampling

Sampling was exhaustive and included all prescribing physicians present during the study period who agreed to participate and responded to the questionnaire. Visiting physicians present during the data collection were excluded. Ultimately, 350 prescribers surveyed using a structured questionnaire constituted the sample.

### Data Analysis

Data were entered using Microsoft Excel 2013 and exported to IBM SPSS Statistics version 21.0 for analysis (IBM Corp, 2012). The association between satisfaction indicators and prescriber satisfaction was analysed using the chi-square test.

### Ethical Considerations

The study protocol was submitted to and approved by the Ethics Committee of the Kinshasa School of Public Health under approval number ESP/CE/09/2025 on January 23, 2025. Data processing was conducted anonymously and confidentially, ensuring fairness and absence of conflict of interest.

## RESULTS

### Overall Data for the City of Kinshasa

This survey was conducted in five general referral hospitals with a sample of 350 prescribing physicians.

### Distribution of Prescribers by Hospital

**Table 1:**  
Distribution of Prescribers by Hospital

Hospital	n	%
CHUR	101	28.86
CUK	97	27.71
HGR de Kinkole	52	14.86
HGR de Makala	51	14.57
HMGR de CCT	49	14.00
<b>Total</b>	<b>350</b>	<b>100.00</b>

CHUR was the most represented healthcare facility, with 101 participants.

### Profile of Prescribers of Analyses

**Table 2:**  
Profile of Prescribing Physicians by Department

Department	n	%
Internal Medicine	113	32.29
Pediatrics	66	18.86
Obstetrics and Gynecology	49	14.00
Surgery	46	13.14
Anesthesia and Intensive Care	22	6.29
O.R.L	15	4.29
Dermatology	9	2.57
Dental Medicine	7	2.00
Ophthalmology	7	2.00
Emergency Medicine	7	2.00
Community Medicine	5	1.43
Medical Imaging	3	0.86
Physical Medicine and Rehabilitation	1	0.29
<b>Total</b>	<b>350</b>	<b>100.00</b>

Internal Medicine and Pediatrics were the most represented departments, with 113 and 66 participants, respectively.

### Reception at the BML

**Table 3:**  
Level of Satisfaction of Prescribers with Reception at the BML

Level of Satisfaction	n	%
Disappointed	22	6.3
Inadequate	43	12.3
Average	136	38.9
Satisfied	125	35.7
Very Satisfied	24	6.9
<b>Total</b>	<b>350</b>	<b>100.0</b>

Overall, 42.6% of prescribers were satisfied with the reception, including 6.9% who were very satisfied. Meanwhile, 6.3% were disappointed.

### Satisfaction with the List of Analyses Offered by BML

**Table 4:**  
Degree of Satisfaction with the List of Analyses Proposed by BMLs

Degree of Satisfaction	n	%
Disappointed	13	3.71
Inadequate	49	14.00
Average	144	41.14
Satisfied	126	36.00
Very Satisfied	18	5.14
<b>Total</b>	<b>350</b>	<b>100.00</b>

41.14% of respondents were satisfied, including 5.14% who were very satisfied. However, 14% of prescribers found the list of tests offered insufficient.

### Relevance of Results and Reports

**Table 5:**  
Prescribers' Level of Satisfaction with the Relevance of Results and Reports

Level of Satisfaction	n	%
Disappointed	9	2.57
Inadequate	37	10.57
Average	123	35.14
Satisfied	162	46.29
Very Satisfied	19	5.43
<b>Total</b>	<b>350</b>	<b>100.00</b>

Overall, 51.72% of participants were satisfied, including 5.43% who were very satisfied. Only 2.57% were disappointed with the reports and the relevance of results.

### Time Taken to Deliver Results

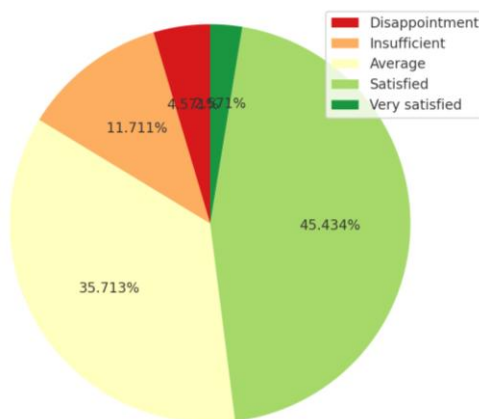
**Table 6:**  
Degree of Satisfaction Regarding Time Taken to Deliver Results

Degree of Satisfaction	n	%
Disappointing	20	5.71
Inadequate	45	12.86
Average	141	40.29
Satisfied	137	39.14
Very Satisfied	7	2.00
<b>Total</b>	<b>350</b>	<b>100.00</b>

A total of 41.14% of participants were satisfied with the time taken to deliver results, 39.14% were satisfied, and 2% were very satisfied.

### Level of Satisfaction Among Prescribers in Kinshasa

**Figure 1:**  
Level of Satisfaction Among Prescribing Doctors in Kinshasa



The overall satisfaction level was 45.43%, with 2.57% reporting being very satisfied.

### Degree of Association Between the Different Indicators

#### Reception at the BML and Satisfaction

**Table 7:**  
Association Between Reception at the BML and Prescriber Satisfaction

Reception at BML	Disappointed	Inadequate	Average	Satisfied	Very Satisfied	Total
Disappointed	3	3	5	11	0	22
Inadequate	4	12	14	13	0	43
Average	6	20	65	45	0	136
Satisfied	3	6	38	72	6	125
Very Satisfied	0	0	3	18	3	24
<b>Total</b>	<b>16</b>	<b>41</b>	<b>125</b>	<b>159</b>	<b>9</b>	<b>350</b>

#### Chi-Square Test

Pearson Chi-Square = 70.751, df = 16, p < 0.001

There is a strong association between the quality of reception at the BML and prescriber satisfaction (p < 0.001).

#### Waiting Time for Results and Satisfaction

**Table 8:**  
Association Between Waiting Time for Results and Prescriber Satisfaction

Waiting Time (DRR)	Disappointed	Inadequate	Average	Satisfied	Very Satisfied	Total
Disappointed	2	3	9	6	0	20
Inadequate	8	19	15	3	0	45
Average	3	13	68	57	0	141
Satisfied	3	6	33	86	9	137
Very Satisfied	0	0	0	7	0	7
<b>Total</b>	<b>16</b>	<b>41</b>	<b>125</b>	<b>159</b>	<b>9</b>	<b>350</b>

#### Chi-Square Test

Pearson Chi-Square = 124.902, df = 16, p < 0.001

There is a strong association between waiting time and satisfaction (p < 0.001).

### Relevance of Results, Reports, and Satisfaction

**Table 9:**  
Association Between Relevance of Results, Reports, and Prescriber Satisfaction

Relevance of Results, CR	Disappointed	Inadequate	Average	Satisfied	Very Satisfied	Total
Disappointed	2	0	7	0	0	9
Inadequate	4	11	12	3	7	37
Average	8	15	64	35	1	123
Satisfied	1	6	38	112	5	162
Very Satisfied	1	2	4	9	3	19
<b>Total</b>	<b>16</b>	<b>34</b>	<b>125</b>	<b>159</b>	<b>16</b>	<b>350</b>

### Chi-Square Test

Pearson Chi-Square = 149.642, df = 16,  $p < 0.001$

There is a strong association between the relevance of results and prescriber satisfaction ( $p < 0.001$ ).

### List of Analyses and Satisfaction

**Table 10:**  
Association Between List of Analyses and Prescriber Satisfaction

List of Analyses	Disappointed	Insufficient	Average	Satisfied	Very Satisfied	Total
Disappointed	2	2	5	4	0	13
Insufficient	4	13	17	14	1	49
Average	8	16	67	52	0	143
Satisfied	2	7	35	74	8	126
Very Satisfied	0	2	1	15	0	18
<b>Total</b>	<b>16</b>	<b>41</b>	<b>125</b>	<b>159</b>	<b>9</b>	<b>350</b>

### Chi-Square Test

Pearson Chi-Square = 149.642, df = 16,  $p < 0.001$

There is a strong association between the list of analyses offered and prescriber satisfaction ( $p < 0.001$ ).

## DISCUSSION

This study assessed the satisfaction of prescribers of biomedical analyses in Kinshasa with the services provided by medical laboratories in five general hospitals in the city: Kinkole General Reference Hospital, Makala General Reference Hospital, Renaissance University Hospital Center, Kinshasa University Clinics (CUK), and Colonel Tshatshi Military Hospital (HMGR CCT).

### Overall Data

#### Distribution of prescribers by hospital

CHUR was the most represented healthcare facility, with 101 participants (28.86%). This facility has a larger medical staff than the other selected hospitals, and its staff showed more enthusiasm for participating in the survey.

#### Profile of prescribing physicians by department

In this study, the Internal Medicine department accounted for 32.29% ( $n = 113$ ) of participants and the Pediatrics department for 18.86% ( $n = 66$ ), making them the most represented departments. This is consistent with the study conducted in 2021 in the Clinical Biology Laboratory of the CUK by Chabo et al., who noted that Internal Medicine was the leading department, followed by Pediatrics, with 19.4% and 18.2%, respectively (Chabo et al., 2022). The Internal

Medicine and Pediatrics departments generally have the largest number of doctors in hospitals and prescribe the most biomedical tests to establish diagnoses, prognoses, and monitor therapy effectiveness.

### Degree of satisfaction among beneficiaries of BML services in Kinshasa

The degree of satisfaction among prescribers was satisfactory and very satisfactory for 45.43% and 2.57%, respectively. This result is close to that found by Kiyombo et al. (2022), who reported a 48% overall patient satisfaction rate at CUK, and by Chabo et al. (2022), who reported an overall satisfaction of 45.2% among prescribing physicians. Meanwhile, Tshibola et al. (2023) reported a satisfaction rate of 30.5% among prescribers at the Provincial General Reference Hospital in Kinshasa (now CHUR). The difference may be due to the present study including prescribers from five hospitals with a larger sample size and possibly improvements following recommendations from the Tshibola et al. survey.

Our results differ from those found in America and Europe, where Jones et al. (2009) and Yameogo and Zabsonre (2014) reported satisfaction rates ranging from 68% to 98%. In Algeria, Oualitsen et al. (2017) reported an average satisfaction rate of 64.3%. In Tunisia and Morocco, satisfaction rates were 51% (Ajmi & Gazzeh, 2021) and 97.86% (Lakhlifi, 2021), respectively. Ethiopia reported 78.6% satisfaction (Hailu et al., 2020), and in West Africa, Burkina Faso reported rates between 52.7% and 94.12% (Yameogo & Zabsonre, 2014).

Differences in satisfaction rates may be explained by: (a) sociocultural factors affecting perceptions; (b) availability of resources and technological capacity affecting reception, test availability, and turnaround times; and (c) the category of beneficiaries surveyed, as our study focused solely on prescribing physicians, while others included patients or other users of BML services.

It should also be noted that staff competence and availability of modern laboratory technology vary worldwide. Some BMLs in resource-limited countries lack state-of-the-art automated equipment and rely on manual or semi-automated methods, and face challenges in recruiting and retaining qualified staff.

### *Key indicators associated with prescriber satisfaction*

The four key indicators associated with prescriber satisfaction in Kinshasa BMLs were reception quality, waiting time for results, relevance of results and reports, and the list of tests offered.

This study found a strong association between quality of reception and prescriber satisfaction ( $p < 0.001$ ), consistent with the 2019 Deep Review conducted in France, which reported that over half of French respondents consider reception quality the primary factor in choosing a laboratory (Sia Partners, 2019). Similarly, Oualitsen et al. (2017) in Tunisia reported 95.5% overall patient satisfaction linked to reception quality and 74.45% satisfaction with waiting times. Kiyombo et al. (2022) in Kinshasa also showed a significant relationship between patient reception and satisfaction. In Burkina Faso, Yameogo et al. (2014) found an association between patient satisfaction and reception quality, with overall satisfaction at 78.3% compared to 68.1% satisfaction with reception.

A strong association was also observed between waiting time for results and prescriber satisfaction ( $p < 0.001$ ). This aligns with the Deep Review report, which identified waiting time as the primary source of dissatisfaction, with communication fluidity being crucial for 38% of clients (Sia Partners, 2019). Chabo et al. (2022) highlighted turnaround time challenges at the Clinical Biology Laboratory of a tertiary hospital in DRC and recommended corrective measures. Kiyombo et al. (2022) found 48% dissatisfaction with services at CUK's Clinical Biology Laboratory, with no participants satisfied with result delivery. Tshibola et al. (2023) reported only 17.1% satisfaction with turnaround time at the Provincial General Reference Hospital. Lakhlifi (2021) reported 92% satisfaction with turnaround time in Morocco, and Oualitsen et al. (2017) reported 65.7% in Algeria. Hailu et al. (2020) in Ethiopia found 70% satisfaction with turnaround time, which patients generally considered short.

The study also found a strong association between relevance of results and prescriber satisfaction ( $p < 0.001$ ). Tshibola et al. (2023) noted accuracy of results as a key quality indicator needing improvement. Chabo et al. (2021) linked low prescriber satisfaction (48.5%) to dissatisfaction with test result accuracy (43.4%). In Tunisia, Oualitsen et al.

(2017) reported 100% satisfaction with clear reports in conjunction with overall satisfaction of 95.5%.

Similarly, the list of tests offered was strongly associated with satisfaction ( $p < 0.001$ ). Tshibola et al. (2023) highlighted availability of requested tests as a key quality factor, with only 12.4% of physicians satisfied with test availability.

### CONCLUSION

The study revealed that prescriber satisfaction with biomedical laboratory (BML) services in selected public hospitals in Kinshasa is generally low. Key concerns among prescribers included the quality of reception services, delays in result delivery, unavailability of certain tests, and issues with the clarity and clinical relevance of laboratory reports. These gaps suggest systemic weaknesses in the organisation and responsiveness of laboratory services, which could compromise the overall quality of patient care.

To address these challenges, it is imperative that health authorities implement targeted improvements focused on customer service, turnaround time, test availability, and report communication. In line with World Health Organization (WHO) guidelines, beneficiary satisfaction surveys should be conducted regularly – preferably every two years – as part of a broader strategy to monitor and enhance the performance of laboratory systems (World Health Organization, 2020). Strengthening these aspects of laboratory service delivery will not only improve prescriber satisfaction but also support more accurate diagnoses and better health outcomes for patients in the Democratic Republic of Congo.

### Limitations

This study focused solely on prescribers' satisfaction, one category of BML beneficiaries. It was also limited to five general referral hospitals in Kinshasa.

### Strengths

This study adds valuable data by including five referral hospitals and examining multiple factors contributing to prescriber satisfaction.

**Ethical Approval:** The study protocol was submitted to and approved by the Ethics Committee of the Kinshasa School of Public Health under approval number ESP/CE/09/2025 on January 23, 2025.

**Conflicts of Interest:** None declared.

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Muwonga, M. J.<sup>2</sup>: Nil identified

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