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Data quality, cancer burden, and disparities in oncology care reported in Kinshasa, Democratic Republic of Congo: a retrospective longitudinal descriptive observational study of data from the National Health Information System from 2017 to 2025.

Pascal Atuba Mamenepi[1*], Héritier Kalubi Belanga [2], Jacques Lofandjola Masumbuku[3], Félicien Ilunga Ilunga[3], Félicien Tshimungu Kandolo[3]

[1.] Student in Biostatistics and Health Informatics, Higher Institute of Medical Techniques of Kinshasa, Kinshasa, Democratic Republic of Congo

[2] Student in Nursing Sciences, Higher Institute of Medical Techniques of Kinshasa, Kinshasa, Democratic Republic of Congo

[3.] Professor, Higher Institute of Medical Techniques of Kinshasa, Kinshasa, Democratic Republic of Congo

Abstract

Introduction

The availability of high-quality data is an essential condition for quantifying the burden of disease, supporting healthcare decision-making, and rigorously assessing equitable access to oncology care.

Objective: This study aims to analyze data completeness, temporal trends in cancer, and disparities in oncological care reported in Kinshasa.

Methods

A retrospective longitudinal descriptive observational study was conducted. The Kinshasa National Health Information System from 2017 to 2025 served as the data source. Cancer types, chemotherapy, morphine use, and mortality were examined. Data completeness was determined using these indicators as well as by health zone classification. Temporal trends were assessed using Spearman's rank correlation coefficient (α=0.05).

Results

Data completeness was high for cancers (>70–90%), low for chemotherapy (<50%), and poor for morphine (≤40%), with marked geographical disparities. The number of reported cancer cases increased from 2017 to 2019 (4,633 vs. 7,926) with a drop in 2021 (3,861 cases), then recovered to reach its highest level in 2024 (11,514 cases). Unspecified cancers accounted for more than 75% of cases. Chemotherapy use decreased in 2020 and 2023, but reporting of morphine access increased after 2021 (from 29 to 107 patients in 2025). The case fatality rate peaked in 2021 (4.30%) and decreased between 2024 and 2025 (≈1.5–1.9%). The trends in the analysis were heterogeneous across areas.

Conclusion

The results highlight deficiencies in the quality of health data reporting and disparities in access to the continuum of cancer care in Kinshasa. This underscores the need for improved data archiving services and the classification of different cancer types.

Recommendation

Thus, it is necessary to consolidate the health information system by harmonizing and standardizing cancer coding, systematically digitizing data, optimizing health archiving devices, and implementing measures to reduce inequalities in access to oncological care.

Keywords: *Data accuracy; Neoplasms; Health services accessibility; Retrospective studies; Kinshasa*
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Corresponding author: Pascal Atuba Mamenepi[1*]
Email: pascalatuba@gmail.com https://orcid.org/0000-0002-4735-8670
Student in Biostatistics and Health Informatics, Higher Institute of Medical Techniques of Kinshasa, Kinshasa, Democratic Republic of Congo

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Introduction

Currently, cancer is one of the major challenges facing human health worldwide. The Global Cancer Observatory (GLOBOCAN) warns of a growing trend in cancer cases and deaths, estimated at over 19 million and 10 million, respectively, in 2020 (Sung et al., 2021) . However, this cancer burden is not distributed equally. Cancer-related mortality is dominated by low- and middle-income countries. According to WHO estimates, nearly 70% of cancer deaths occur in these countries (Ngwa et al., 2022; WHO, 2020).

The availability of reliable and accurate information remains crucial for planning and evaluating intervention plans in oncology. Rational, data-driven decision-making relies on data reliability, particularly regarding the level and quality of the components used for monitoring (Ghalavand et al., 2024).

Studies conducted in settings with limited health surveillance have also revealed chronic limitations, particularly in sub-Saharan Africa. For example, in an assessment of the quality of data submitted to GLOBOCAN by cancer registries in sub-Saharan Africa, researchers identified data quality issues related to comparability, completeness, and other factors (Sung et al., 2021) . Conversely, the implementation of more proactive data collection techniques and approaches has demonstrated the potential to improve the completeness and accuracy of data collected in some southern African settings (Somdyala et al., 2021) .

In addition to the quality of the data, the analysis of the continuum of care in oncology (diagnosis, treatment, and palliative care) highlights substantial variations in access (Omotoso et al., 2023) .

New reviews and studies on disparities in cancer care highlight geographical barriers to accessing necessary medications and systemic therapies (Higgins et al., 2026) . Access is hampered by gaps in the availability and affordability of treatments across countries and contexts (Somdyala et al., 2021) . Similarly, the literature points to limited access to palliative care and pain management in many low-resource settings (Huang et al., 2019) .

Furthermore, the production of cancer data in the Democratic Republic of Congo, and specifically in Kinshasa, for the collection of data related to the health of the population of Kinshasa, is mainly ensured by the National Health Information System (SNIS) and the current collection technology.

However, the problems often reported in surveillance systems are largely fragmented data collection processes, low digitization levels, insufficient standardized diagnostic coding, and a lack of standardization in diagnostic coding, all of which compromise the consistency and comparability of the data generated. This, in turn, undermines the quality and comparability of the surveillance system. Yet, electronic health record (EHR) systems offer numerous opportunities to improve healthcare delivery in sub-Saharan African (SSA) countries by optimizing data management and patient care, and by reducing errors (Mugauri et al., 2025).

Therefore, as cancer continues to emerge as a public health crisis in sub-Saharan Africa, a comprehensive source of consistent and credible data is needed (Lawrence) to assess (i) data quality/completeness, (ii) temporal trends, and (iii) inequalities across the continuum of care, ideally at an intra-urban level.

The provision and quality of health data influence cancer burden diagnosis and care. Very few studies have examined data quality, cancer burden, and disparities in access to the continuum of cancer care in Kinshasa within an integrated model.

This study aims to provide evidence for the further improvement of cancer control systems by integrating these three dimensions within a comprehensive research framework. The objective is to analyze data completeness, temporal trends in cancer rates, and disparities in oncology care reported in Kinshasa.

Materials and methods

Study design

A descriptive observational study with a longitudinal aim, conducted in a retrospective manner, and based on the secondary analysis of routine data from the National System health information system (SNIS) of Kinshasa, was conducted during the period from 2017 to 2025. This approach allows for the analysis of cancer trends over such a considerable period (almost a decade, or nine consecutive years), providing essential historical perspective. This helps to identify variations by considering events that occurred during this period.

The study setting

The study was conducted in the city-province of Kinshasa, capital of the Democratic Republic of Congo, located in Central Africa.

The Provincial Health Division (DPS) Kinshasa is part of the 26th province of the country. It contains within it 35 health zones (ZS), each of which has a General Referral Hospital (HGR), some Reference Health Centers (CSR), and Health Training (FOSA), each with various minimum activity packages (DPS-Kinshasa, 2025) .

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Within this entity, the reporting of so-called "SNIS" data begins manually at the level of each department within the various health facilities (FOSA), is then sent to the archives department for local centralization, and finally reaches the CSR center for data compilation at the Health Area (AS) level. The AS, in turn, transmits the data to the Central Health Zone Office (BCZS). It is at this level (BCZS) that the data is entered into the computer system and transmitted to the Provincial Health Directorate (DPS).
The data was extracted on 10/04/2026 and made available to us by the "info-santa" service of the Kinshasa provincial health division.

Population and sampling

The study population consists of all cancers reported and archived by the DPS-Kinshasa. An exhaustive or population-based sampling method was used, in which we considered all cases reported during the study period.
Furthermore, it is important to note that analyses were conducted in two phases, depending on the data available to us: (i) From 2017 to 2025, we received aggregate data, meaning the total number of reported cases for all of Kinshasa. (ii) From 2021 to 2025, data were obtained for the city but also for each of 35 health zones, which was useful for comparisons between these health zones.

Selection criteria

The inclusion criteria were: (i) all cancer cases reported in Kinshasa's SNIS between 2017 and 2025, and (ii) all available information regarding treatments, morphine use, and cancer deaths.
On the other hand, data outside the study period, incomplete records that did not allow identification of the targeted indicator, and suspected duplicates detected during data consolidation were excluded from the final analyses.

Data collection technique and source

The data was collected by extracting information from the computerized health information system of the DPS-Kinshasa. This data was extracted transparently by the data manager of the health information service of this institution. The source was the SNIS/Kinshasa.

Variables of interest

This study considered the following as variables of interest: reported cancers and their types (breast, cervix, prostate, etc.). It included the reported number of patients treated with chemotherapy and those receiving morphine. Furthermore, the study analyzed the number of cancer patient deaths to determine the disease's mortality rate. The presence of reported numbers allowed us to assess the completeness of the reporting.

Actions taken to limit potential biases

The main possible sources of bias in the study consisted of underreporting, transcription errors, missing data, and heterogeneity in reporting. However, to mitigate their effect, necessary measures have been implemented, including: the use of a centralised provincial database, the exhaustive analysis of all available information, and a circumspect interpretation of the results.

Data analysis

The data were processed using the modern version of Excel integrated with Microsoft 365 and JASP 0.95.4.0. The objective of the study was to analyze the completeness of the data, the temporal trends of cancer, and the disparities in reported oncological care. Some results were mainly presented in the form of figures, such as the heat map, time series graphs, and others in tables.
Completeness was assessed in each health zone by considering the presence or absence of reported cases, regardless of population size. The study thus took into account the number of different types of cancer (breast, cervical, prostate, and others), the number of chemotherapy and morphine treatments, and cancer deaths reported from 2021 to 2025. This yielded a total of 35 indicators for the five years. On the corresponding heat map, each green cell indicated the presence of data, while red indicated absence.
To gain a better understanding of the overall temporal trend, a negative binomial regression was performed, given that the data consisted of counts but with significant overdispersion (deviance/degrees of freedom ratio = 974.645 and Pearson's chi-squared/degrees of freedom ratio = 978.427, both well above 1). Furthermore, the likelihood ratio test was performed and indicated that the model including the year variable was significant ($\chi^2 = 12.890$; $p < 0.001$), suggesting an improved fit compared to the null model.
Furthermore, to explore temporal trends at a more disaggregated level, Spearman's rank correlation coefficient was calculated to verify the significance of temporal trends for each indicator in the different health zones, depending on how the data were reported. Due to their sheer volume, but in order to provide a detailed presentation of each result, these results were also presented on a heat map.
The use of heat maps has been justified in several public health and epidemiological studies (Gu, 2022; Yu et al., 2020; Carroll et al., 2014) as have time series graphs for studies of temporal trends (Tomov et al., 2023) .

Ethical considerations

The overall protocol of this study was submitted to the ethics committee of ISTM/Kinshasa and obtained authorization

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No. 0036/CBE/ISTM/KIN/RDC/PMBBL/2025 dated 12/02/2026. Furthermore, the recorded information was treated with complete confidentiality, and there was no human manipulation in this study.

Results

Data instabilities

Data Completeness

Figure 1 presents the heat map of data completeness by indicator and health zone for the last five years (2021 – 2025).

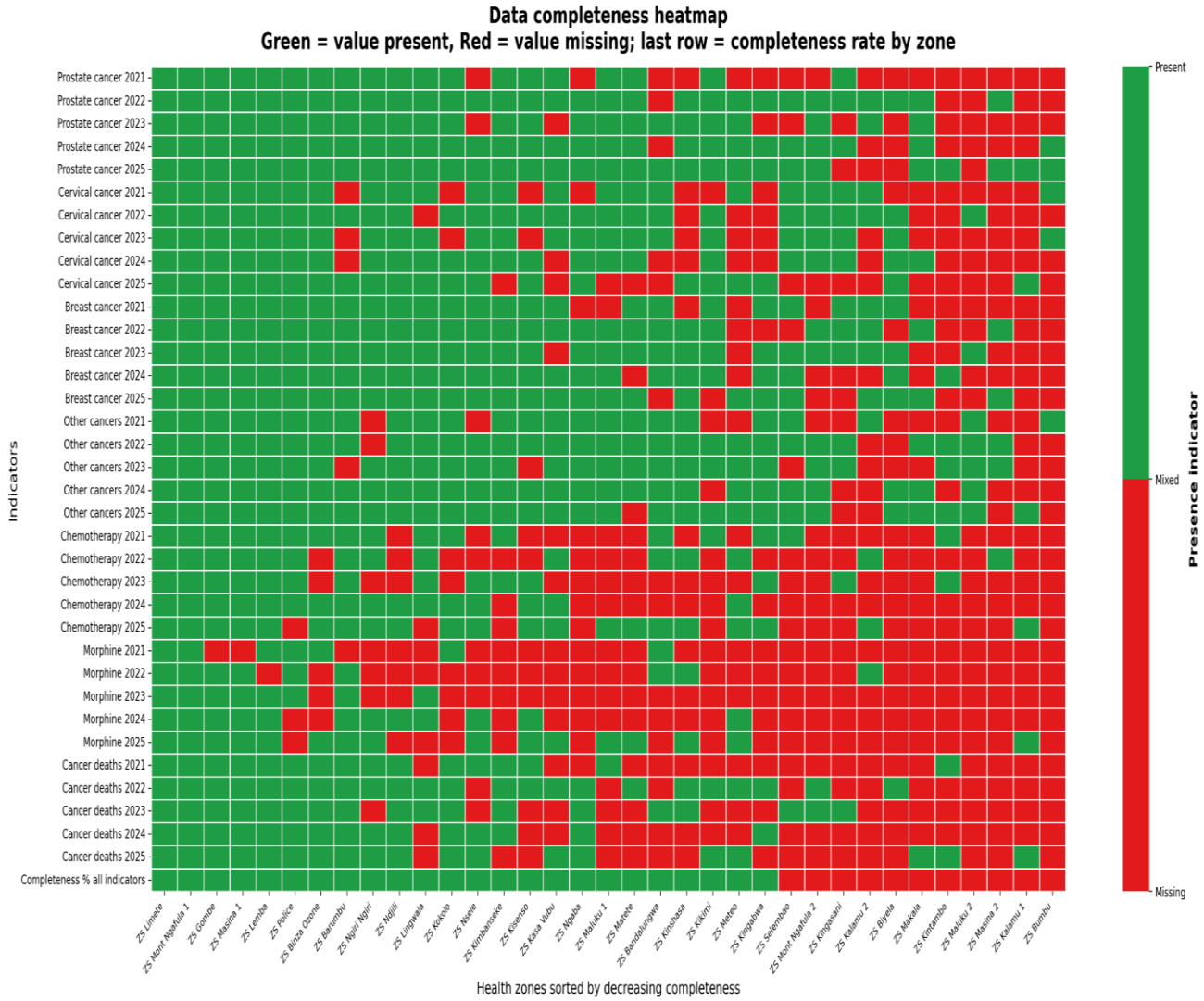

Figure 1: Heat map of completeness

It is therefore clear that reporting rates vary depending on the indicators and health zones. The two zones with maximum completeness are Limete and Mont Ngafula 1, which reported all the indicators studied. These are followed by Lemba, Masina 1, and Gombe, which only missed morphine data in 2022 for the first and 2021 for the other two. Furthermore, low completeness was recorded in the health zones of Bumbu, Kalamu 1, Masina 2, Maluku 2, Kintambo, Makala, Kalamu 2, and Biyela, with reporting of less than 40% of all the indicators concerned.

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Number of cases reported by area (2021 – 2025)

Figure 2 presents the heat map of reported numbers for each indicator and by health zone.

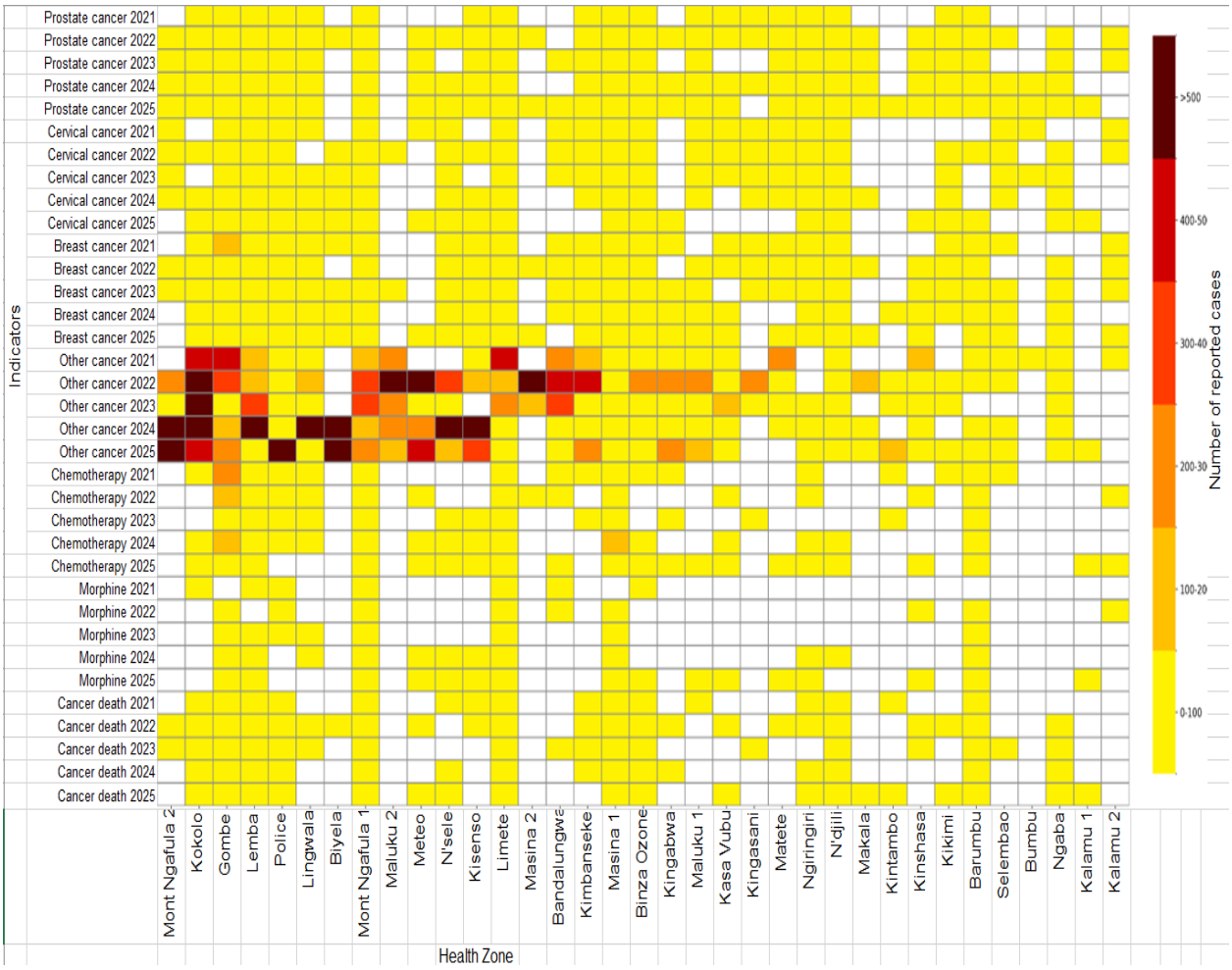

Figure 2: Thermal map of reported staff numbers

On this map, the health zones shown on the left are characterized by a high number of reported cases, particularly for the "other cancers" indicator, where reported cases range from 200 to over 500 depending on the year. The zones on the right, however, report a much lower number of cases, often fewer than 100, with significant missing data (empty cells), especially concerning chemotherapy and morphine. This indicates a severe disparity in case reporting among the health zones.

Temporal trends in cancer as a whole (2017 – 2025)

Figure 3 describes the temporal trends of cancer in the Kinshasa provincial health division from 2017 to 2025.

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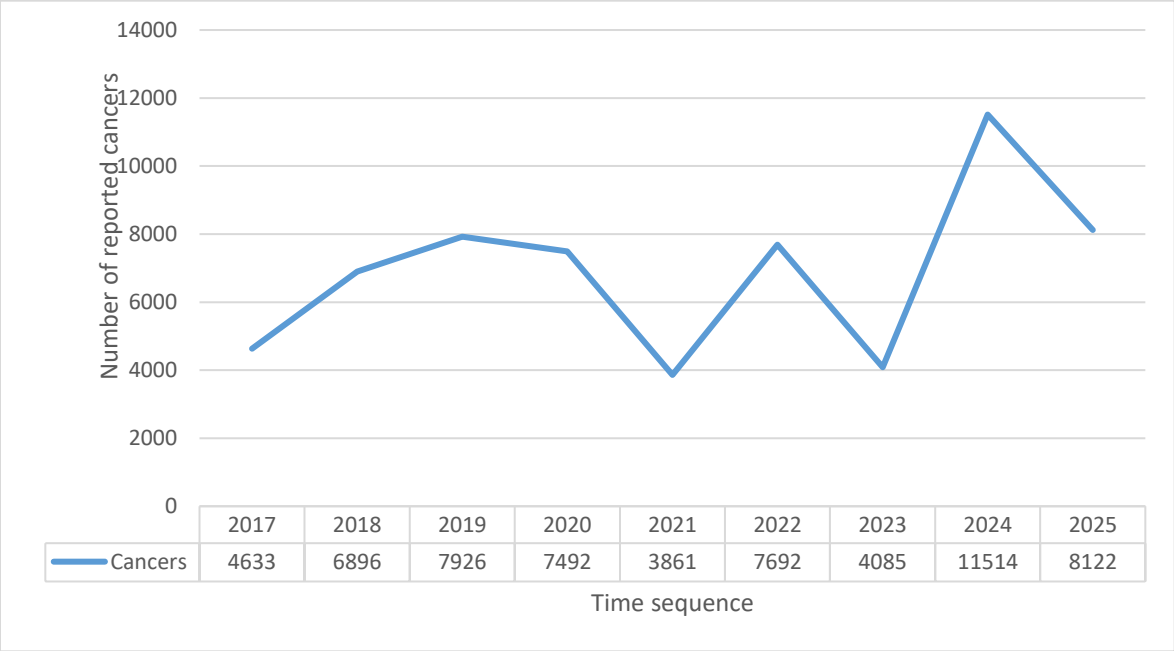

Figure 3: Temporal trends in cancer

From this figure, the results show that the number of reported cases of cancer increased from 2017 to 2019 (4,633 vs 7,926) with a drop in 2021 (3,861 cases), then resumed to reach its highest level in 2024 (11,514 cases).

Table 1 presents the results of the negative binomial regression analyzing the association between year and cancers reported from 2017 to 2025.

Table 1: Effect of year on the evolution of reported cancers

Variable	B	Standard error	IRR (Exp(B))	95% CI IRR	p-value
Year	-0.005	0.033	0.995	0.931 – 1.062	0.871
Constant	19.86	67,745			0.769

This table shows that no statistically significant association was observed between the year and cancers reported from 2017 to 2025 (IRR = 0.995; 95% CI: 0.931–1.062; p = 0.871).

Type of cancers diagnosed in Kinshasa

Figure 4 shows the trends in reported cancers according to their category or type.

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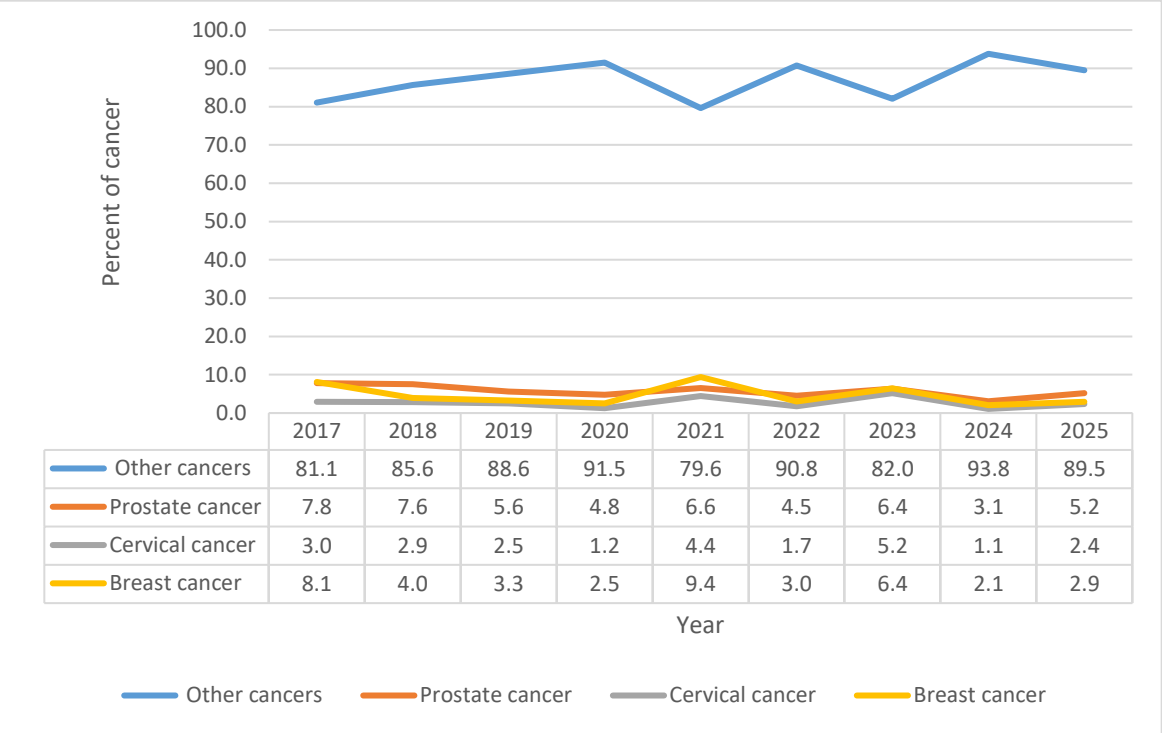

	2017	2018	2019	2020	2021	2022	2023	2024	2025
Other cancers	81.1	85.6	88.6	91.5	79.6	90.8	82.0	93.8	89.5
Prostate cancer	7.8	7.6	5.6	4.8	6.6	4.5	6.4	3.1	5.2
Cervical cancer	3.0	2.9	2.5	1.2	4.4	1.7	5.2	1.1	2.4
Breast cancer	8.1	4.0	3.3	2.5	9.4	3.0	6.4	2.1	2.9

Figure 4: Trends in diagnosed and categorized cancers

Figure 4 shows a predominance of unspecified cancers (other cancers), with a variation of around 79.6% (2021) and 93.8% (2024). The proportions of well-categorized cancers remain extremely small: prostate cancer varies between 3.1% and 7.8%, and this decrease follows a steady trajectory until 2024, before finally rising to 5.2% in 2025. Breast cancer fluctuates more, with a notable peak at 9.4% in 2021, followed by a decline and stabilization around 2-6% in subsequent years. Finally, cervical cancer has the lowest representation rate (1.1% to 5.2%).

Disparities in cancer and oncology care reported from 2021 to 2025

Figure 5 presents the temporal trends of the reported data (Spearman rank correlation results for each indicator in the ZS of Kinshasa during the last five years).

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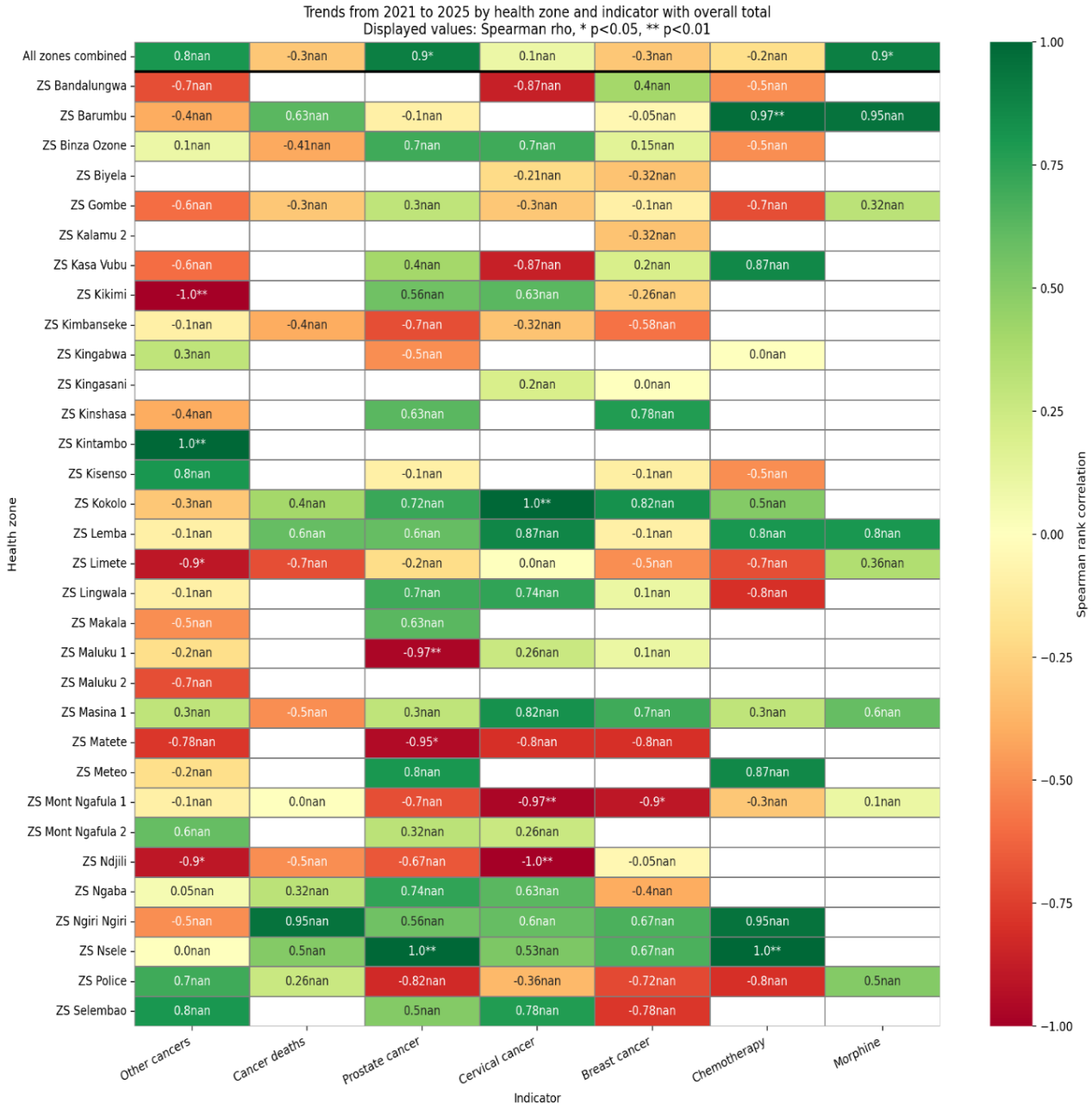

Figure 5: Trends in cancer rates by health zone

This figure shows a substantial increase in the Nsele health zone for chemotherapy and prostate cancer ($p < 0.01$). The Kintambo health zone shows a strong increase for "other cancers" ($p < 0.01$), while the Ngiri-Ngiri health zone shows large but not statistically significant increases for chemotherapy and breast cancer.

On the other hand, a clear decrease in reported cases is evident in certain areas. Among these, the N'djili health zone stands out with cervical cancer and "other cancers" ($p < 0.05$). Similarly, the Mont Ngafula 1 health zone shows strong negative and statistically significant correlations for

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cervical cancer and breast cancer, and the Matete health zone for prostate cancer ($p < 0.05$).

Overall, the reported number of prostate cancers and the number of patients benefiting from morphine increased significantly between 2021 and 2025 ($p < 0.05$).

Patients receiving treatment, palliative care, and cancer mortality

Figure 6 shows the cross-evolution of access to chemotherapy and morphine from 2017 to 2025.

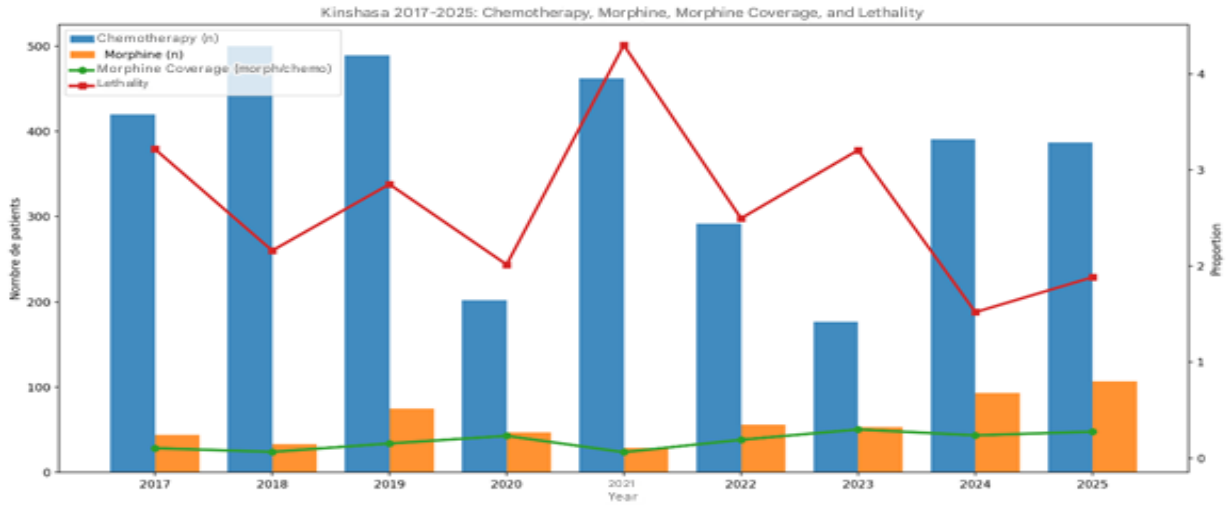

Figure 6: Evolution of treatment, palliative care, and cancer mortality

From this figure, a wave-like evolution of information related to chemotherapy, morphine administration, and cancer lethality in Kinshasa.

Regarding chemotherapy, the highest level of admissions was reached in 2018, with 500 reported cases. Admissions in 2020 were reduced by 59% compared to 2019. The second lowest level was also recorded in 2023 (177 cases), followed by a rapid recovery between 2024 and 2025.

Compared to morphine, the trend is reversed and positive. After falling to a very low level in 2021 (29 patients), the number of patients receiving morphine increased almost continuously to reach 107 patients in 2025, the highest level over the entire period, with an increase of almost 3.7 times over the four years.

Regarding the case fatality rate, the peak was reached in 2021 (4.30%), a year also marked by a collapse in the actual number of cases and a high number of admissions for chemotherapy. The last two years (2024 to 2025) show the lowest case fatality rates in the series (1.52% and 1.88%).

Association between the reported number of deaths and oncological care

Table 2 presents the results of the correlation check between the reported number of deaths in oncology and the reported number of patients who received chemotherapy and/or morphine.

Table 2: Association between the reported number of deaths and cancer care

Variables			Spearman's rho	p
Number of chemotherapy treatments	-	Number of morphine	-0.317	.410
Number of chemotherapy treatments	-	Number of deaths	0.243	.529
Number of morphine	-	Number of deaths	0.444	.232

These results show no correlation between the reported number of deaths in oncology and the reported number of patients who received chemotherapy and/or morphine ($p > 0.05$).

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Discussion

The discussion will focus on the salient results of the study in relation to the objective pursued, which was to analyze the completeness of the data, the temporal trends of cancer, and the disparities in oncological care reported in Kinshasa.

Low completeness and heterogeneity of data

The data are incomplete and of inconsistent quality. It emerges very high completeness for some indicators (cancers) but low completeness for chemotherapy and morphine, with considerable disparities between health zones. This is consistent with the situation in Africa and other low-income countries.

In fact, a study conducted in South Africa showed that cancer registries in resource-limited countries have low completeness due to the use of passive data collection systems, which differs from developed countries, where systems are standardized and digital (Somdyala et al., 2021) .

Similarly, in West Africa, the Gambia national registry estimated completeness at only about 50%, attesting to the structural challenges in data collection in sub-Saharan Africa (Shimakawa et al., 2013) .

Around the world, wealthy countries use well-integrated and standardized registries to achieve completeness levels of over 70% (Sousa et al., 2025; Budukh et al., 2025; Shivshankar et al., 2024) .

The results, therefore, conform to the typical pattern of fragile health systems in the province, marked by: fragmentation of data sources, low level of digitization, and dependence on passive reporting.

Generally, health data originates from health facilities or training centers at the provincial level, passing through referral health centers in each health area and then to central offices. At each intermediate level, the risk of mismatches can increase the possibility of biasing the final data.

However, there appears to be a difficulty in assessing the completeness of the data, as the gaps observed may indicate a lack of reported cases. Ideally, zero cases should be recorded. This was not done. This highlights the need for a refresher course for those involved in the health data reporting process.

Overall increase in reported cancer cases

The rise between 2017 and 2019, the subsequent decline in 2021, and the later recovery can be viewed with caution in our context, which is the city-province of Kinshasa.

In many African countries, studies have indicated that an apparent increase in cancer cases is more often a reflection of improvements in screening and reporting, rather than a true increase in cancer incidence (Ayubi et al., 2024; Crocker-Buque & Pollock, 2015) .

Furthermore, the decline recorded in 2020-2021 is also consistent with the disruptions associated with the COVID-19 pandemic, during which cancer diagnoses and reports decreased worldwide as a result of diagnostic delays, reduced service utilization, etc. (Danckert et al., 2020)

Based on our results, the observed variations may be potentially due to failures in the reporting system, external shocks including COVID-19, especially the disruption observed around the year 2020, and a gradual improvement in the health information system.

High proportion of unspecified cancers

The predominance of unspecified cancers is a major and concerning finding. In sub-Saharan Africa, several studies show that this situation may be linked to a shortage of pathologists, inadequate technical facilities, and/or weak standardized coding. Classification systems such as ICD-O are not applied uniformly in these contexts, resulting in a high proportion of less accurate diagnoses (Sousa et al., 2025) .

This result reveals a critical structural weakness in the healthcare system: late or unconfirmed diagnosis, insufficient biology/pathology, and a lack of coding training.

A small number of patients are undergoing chemotherapy, but an upward trend in the number of morphine recipients over time.

The results show low chemotherapy coverage, but a gradual improvement in access to morphine. This situation is well-documented in Africa, where access to cancer treatments remains limited due to costs, infrastructure, and human resources. African studies show that less than 50% of patients have access to complete cancer treatments (Ayubi et al., 2024) .

Globally, access to cancer care is highly unequal, with resources concentrated in high-income countries, according to recent publications. This would explain the low reported number of patients undergoing chemotherapy in Kinshasa.

In our context, an improvement in reported morphine would reflect significant progress in palliative care, highlighting the positive outcomes of various conferences, symposia, and congresses recently organized in the city by different organizations, including the National Palliative Care Association, the NGO Pallia Familli, as well as other local or foreign partners.

Gradual decrease in lethality

There are different ways of thinking about reducing lethality between 2024 and 2025. For high-income countries, reducing cancer mortality is correlated with early diagnosis, effective treatments, and effective surveillance systems (Ward et al., 2024; Rajaguru et al., 2022; Vela-Vallespín et al., 2022; Arnold et al., 2019; Muller et al., 2018) .

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But in Africa, an apparent decrease in lethality could also be attributed to underreporting of deaths, poor data quality (Ayubi et al., 2024; Mbeje et al., 2021; Ngwa et al., 2022; Tangka et al., 2019), or loss of patient follow-up (Griesel et al., 2021; Foerster et al., 2020) .

The decline observed in Kinshasa should be interpreted with caution and could reflect either an improvement in care or a limitation in the surveillance system. Without making a hasty inference, the second hypothesis seems plausible given that no association was found between the reported number of oncology deaths and the number of patients who received chemotherapy and/or morphine.

In general, the results of this study are consistent with the characteristics of health systems in resource-limited countries, particularly in sub-Saharan Africa. Furthermore, it is important to clarify that the disparities observed between health zones reflect differences in reporting and/or service organization, rather than a direct measure of actual access to care.

Conclusion

This study aimed to analyze data completeness, temporal trends in cancer, and disparities in oncology care reported in Kinshasa. Its findings reveal significant weaknesses in the quality of reported health data, as well as substantial disparities across the different health zones of the city-province.

The high number of unspecified cancers is a critical indicator of the diagnostic and classification systems at the health facility level in the health zones whose data were analyzed. The variations observed between health zones reflect differences in reporting and service organization more than actual differences in incidence.

Strengths and limitations of the study

Several methodological aspects of this study are its strengths and lend it considerable scientific value. First, an extended longitudinal analysis spanning nine years captures the temporal dynamics of cancer in Kinshasa. This enhances the ability to identify structural trends rather than isolated fluctuations. Second, the use of data from the National Health Information System (NHIS) ensures representativeness of all health zones within the city-province of Kinshasa, and the examination of intra-urban geographic disparities revealed disparities often hidden in aggregate analyses, thus providing valuable insights for targeted interventions. Finally, the inclusion of integrated data quality, cancer burden analysis, and the continuum of cancer care constitutes an innovative contribution. Very few studies of this type in sub-Saharan Africa integrate these three dimensions simultaneously within the same analytical framework. Similarly, the use of appropriate analytical tools (Spearman correlation, heat map visualization) strengthens the descriptive robustness and interpretation of observed trends.

Furthermore, the exclusive reliance on routine secondary data is a major limitation, as underreporting and transcription errors can introduce quality bias. In addition, the SNIS reports large datasets, which limit other analyses such as diagnostic stage, long-term survival, treatment adherence, and control for confounding factors. Similarly, a high proportion of cancers grouped under the "other cancers" category hinders nuanced epidemiological interpretation and impedes detailed analysis of each cancer type. Another limitation is the difficulty in distinguishing between a genuine increase in cases and improvements in the reporting system. The presence of major external events like COVID-19 poses a significant challenge to data reporting around the year 2020, given the requirements imposed by political and health authorities at the global, regional, and local levels.

Recommendations

Considering these results, it is therefore recommended that policymakers, clinical practitioners, and researchers take advantage of the implications arising from the study, primarily about: strengthening the health information system by establishing population-based cancer registries that comply with international standards (ICD-O); improving diagnostic capabilities through continuing education; and optimizing access to treatments through equity in patient care. Researchers in this area must conduct in-depth analytical studies, examining different health zones and their healthcare facilities. They should explore the possibility of creating a reporting plan for multi-impact health crises, such as the COVID-19 pandemic. They should also study the profile of each type of cancer in detail to develop specific solutions.

Implications of the study

Possible implications arise from this study at the level of health policy, clinical practice, research, and the operational level.

Regarding health policies, there is a need to strengthen the health information system. The results support the digitization and standardization of data collection tools, as well as staff training, which would significantly contribute to improving the quality of data reporting. Furthermore, the establishment of population-based cancer registries compliant with international standards (ICD-O), as in other countries, is imperative. Finally, reducing disparities between health zones through the equitable allocation of resources is highly desirable.

In clinical practice, the results suggest the importance of strengthening diagnostic capabilities (anatomical pathology, imaging) to reduce the proportion of unspecified cancers; improving access to chemotherapy, particularly through

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subsidy policies and the development of suitable infrastructure; and consolidating palliative care, capitalizing on the positive dynamics observed in access to morphine.

In relation to research, it is necessary to conduct in-depth analytical studies to identify the determinants of the observed disparities, to conduct prospective research integrating detailed clinical variables (stage, survival, quality of life), and to explore the impacts of health crises (such as COVID-19) on cancer surveillance systems, and then propose a reporting plan in such situations.

At the operational level, the implementation of continuous data quality monitoring systems, the integration of performance indicators for monitoring the continuum of cancer care, and the strengthening of coordination between levels of care to limit information loss are all implications of this study.

Abbreviations

AIC: Akaike Information Criterion
AICC : Akaike Information Criterion corrected for small samples
BCZS: Central Health Zone Office
B: Regression coefficient (model estimator)
CAIC: Consistent Akaike Information Criterion
COVID-19: Coronavirus Disease 2019
CSR: Reference Health Center
df: Degrees of freedom
DPS: Provincial Health Division
EMR: Electronic Medical Record
Exp(B): Exponential of the coefficient B (Incidence Rate Ratio, IRR)
GLOBOCAN: Global Cancer Observatory
HGR: General Reference Hospital
95%: Confidence Interval: 95%
ICD-O: International Classification of Diseases for Oncology
IRR: Incidence Rate Ratio
ISTM: Higher Institute of Medical Techniques
JASP: Jeffreys's Amazing Statistics Program
n: Frequency (number of observations)
WHO: World Health Organization
p-value: Probability associated with the statistical test
PBCR: Population-Based Cancer Registry
SAC: Sub-Saharan Africa Cancer context
SNIS: National Health Information System
SPSS: Statistical Package for the Social Sciences
ZS: Health Zone
χ^2 : Chi-square

Conflicts of interest

The authors state that they have no competing interests.

Data availability

This data is available in the system held by the Kinshasa Provincial Health Division, and the part made available to us can be retrieved from the corresponding author upon reasonable request.

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Author contributions

AMP conceived the study, conducted the formal analyses, and drafted the initial manuscript. KBH participated in data collection and contributed to manuscript writing. IIF and JLM proposed the methods to be used. IIF and TKF were responsible for supervision and substantial revision of the study manuscript. All authors critically reviewed and approved the final manuscript and accepted full responsibility for the integrity of the work.

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Author biographies

Atuba Mamenepi Pascal is a trainer of advanced-level nurses (BAC+5). Since 2020, he has been teaching at the Faculty of Nursing at the Higher Institute of Medical Techniques in Kinshasa. He is currently pursuing research in Biostatistics and Health Informatics at the Doctoral School of Health Sciences in Kinshasa. He reviews a few articles in the Asian Journal of Research in Infectious Diseases and BP International.

Ilunga Ilunga Félicien(https://orcid.org/0000-0002-2517-6294) holds a PhD in Public Health, specializing in Epidemiology, Biostatistics, Clinical Research, and Applied Computer Science. He teaches at the Higher Institute of Medical Techniques in Kinshasa and other higher education institutions and universities in the DRC. From 2005 to 2014, he was responsible for public health projects and served as the academic coordinator for university programs associated with the Higher Institute of Medical Techniques in Kinshasa and the Free University of Brussels. He was an editorial member of the African Annals of Medicine, a journal of the Faculty of Medicine at the University of Kinshasa, in 2018.

Kalubi Belanga Héritier is a registered nurse (Bachelor's degree + 3 years). He is currently pursuing a Master's degree in Nursing and is a member of the NGO Pallia Familli, which provides palliative care in the homes of patients in need in the city of Kinshasa.

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Lofandjola Masumbuku Jacques holds a PhD in Public Health. He teaches at the Higher Institute of Medical Techniques in Kinshasa and the University of the DRC. He is currently the research officer for the National Association for Palliative Care of the Democratic Republic of Congo. Editorial member of the African Annals of Medicine, journal of the Faculty of Medicine, University of Kinshasa.
Tshimungu Kandolo Félicien(https://orcid.org/0000-0002-724-6195) holds a Ph.D. in Public Health. He teaches at the Higher Institute of Medical Techniques in Kinshasa and other universities in the DRC. He was Dean of the Faculty of Nursing, where he significantly contributed to the reform of the education system, transitioning to the LMD (Bachelor's, Master's, Doctorate) system. He was a member of the thesis monitoring and support committee and a member of the thesis examination board at the Erasme Doctoral School, Research Chair in Nursing Sciences, University of Paris 13, Bobigny-Université, Paris, France, from 2015 to 2019.

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