

Research Article

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Prevalence of Psychoactive Substance use in the City-Province of Kinshasa / DR Congo

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ABSTRACT

Context and Objective: Psychoactive substance use among young people is a real public health problem in the Democratic Republic of Congo (DRC). The objective of this study was to determine the prevalence of psychoactive substance use in Kinshasa.

Materials and Methods: This was a cross-sectional and descriptive study conducted among 9,033 subjects distributed across the twenty-four municipalities of Kinshasa from September 7 to December 7, 2022.

The sampling was probabilistic, exhaustive, and convenience. The data were analyzed using Microsoft Excel 2013 software to determine the mean, standard deviation, and confidence interval. The parameters of interest were sociodemographics and the concept of psychoactive substance use.

Results: The average age of the study subjects was 31.5 ± 13.9 years. The majority of subjects were under 40 years of age (72.7%), with a sex ratio of 1.28 M/F. More than half had a secondary education (51.1%), a job (68.8%), a single status (63.2%), a low monthly income (74.2%), had an average of five dependents (50.1%), and 35.3% attended Revival churches. Beer was the most commonly consumed psychoactive substance (65.3%).

Conclusion: The prevalence of psychoactive substance use in Kinshasa is high. This situation is most prevalent among young, high-school-educated men with informal occupations, single men with an average of five dependents, low monthly income, members of the traditional church, and primarily beer consumers.

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Introduction

The use of psychoactive substances (PAS) currently raises considerable controversy and questions [1,2]. In a study in Bamako, Mali, 68.5% of high school students experimented with shisha and 40.5% were current users, followed by “Deri” (33.8% experimented), tobacco (30.3%), cannabis (3.4%), and alcohol (2.4%) [1]. The main factors associated with use are the influence of family and peers [1]. The Vazquez Martinez study on psychosocial factors associated with PAS use among adolescents in Pereira, Colombia, identified that adequate parental supervision is a protective factor against PAS use [2]. Adolescents with friends or relatives who use the drug are

significantly more likely to use it themselves [2]. A 2021 study on the prevalence of ASD use among adolescents in 73 low- and middle-income countries, including Latin America, found a high prevalence of alcohol and tobacco use, with variations by country [3]. This previous study also included data on the prevalence of ASD use among adolescents in Asia, highlighting significant rates of tobacco, alcohol, and illicit drug use [4].

The World Health Organization (WHO/Europe) in its 2024 report on Alcohol, e-cigarettes and cannabis revealed that alcohol is the most commonly consumed AID by adolescents in Europe, with 57% of 15-year-olds having already consumed alcohol [5].

E-cigarettes are overtaking traditional cigarettes in popularity, and cannabis use remains a concern (5). The French Observatory for Drugs and Addictive Trends (OFDT) cites the results of the 2022 EnCLASS survey, which found that binge drinking was 34.5% among high school students [6]. A 2021 study by Hong et al. on factors associated with substance use among adolescents in six low- and middle-income Asian countries noted a high prevalence of tobacco and alcohol use, with variations by country [4].

Indeed, the results of a study on drug use among young adolescents in the Kimwanga and WENZE neighborhoods of the city of Kikwit, in Kwilu province, highlight significant consumption of substances such as cannabis and alcohol, influenced by socioeconomic and family factors [7].

The study on the motivational factors of AED addiction among youth in the Kimbaseke commune of Kinshasa included sensation seeking, social conformity, routine, and intrapsychic conflicts [3,8]. The 2022 Mupoy et al. study on the determinants of tobacco use among youth in Ngaba highlighted the influence of factors such as peer pressure, stress, and a lack of recreational activities [9]. According to a 2008 survey, 33.6% of secondary school students aged 13 to 15 in Kinshasa and Lubumbashi used tobacco, with a higher prevalence among boys (36.5%) than girls (29.3%) [10].

In the Democratic Republic of Congo (DRC), particularly in Kinshasa, there are very few studies to our knowledge on the prevalence of SPA consumption among the general population living in Kinshasa's twenty-four municipalities. Hence the need for this study.

Materials and Methods

This study was cross-sectional and descriptive. It was conducted among 9,033 residents of the twenty-four municipalities of Kinshasa,

DRC, between September 7 and December 7, 2022, who consented to participate in this study to constitute the sample for our study. The inclusion criteria were: Being a resident of one of the municipalities of Kinshasa; Being present during data collection; and being a consumer or not of psychoactive substances.

Any subject who did not live in Kinshasa or had a history of neuropsychiatric illness was excluded from this study. Data were collected using a pre-prepared survey form containing the respondent's identity and the notion of whether or not they used SPAs. The sample size was calculated using the lunch-Fischer formula: $N \geq z^2 * p(1-p) / d^2$

N: Sample size

Z: Epsilon value on the table (assuming the error is 95%)

P: Prevalence of psychoactive substance use in the city of Kinshasa
1 – p

Indeed, the population of Kinshasa was estimated at 15,628,000 inhabitants in 2022 [8,11]. The prevalence of psychoactive substance use in the city of Kinshasa was on average 30-40%. With a modal class of 5, we consider p = 35% as the average [8,11].

$$\begin{aligned} N &\geq (1.96)^2 \times 0.35 \times (1-0.35) / (0.05)^2 \\ &\geq 3.8416 \times 0.35 \times 0.65 / 0.0025 \\ &\geq 0.873964 / 0.0025 \\ &\geq 349.5856 \\ &\geq 350 \text{ respondents.} \end{aligned}$$

This study recorded 9033 subjects distributed in four (4) districts, each of which was in 24 communes. See Table 1.

Table 1: Distribution of the Population by Districts and Municipalities of Residence

N°	Districts /municipalities	Male (N = 5074)	%	Female (N = 3959)	%	Total N = 9033 (100%)
Funa						
1.	Bandalungwa	209	55,3	169	44,7	378
2.	Bumbu	177	49,2	179	50,8	356
3.	Kalamu	201	53,2	177	46,8	378
4.	Kasa-Vubu	188	51,2	179	48,8	367
5.	Makala	231	62,9	136	37,1	367
6.	Ngiri-Ngiri	238	63,1	139	36,9	377
7.	Selembao	196	53,6	170	46,4	366
Total		1440	55,6	1149	44,4	2589 (28,7)
Lukunga						
1.	Barumbu	199	52,4	181	47,6	380
2.	Gombe	221	56,8	168	43,2	389
3.	Kinshasa	200	52,4	182	47,6	382
4.	Kintambo	221	58,3	158	41,7	379
5.	Lingwala	209	53,9	179	46,1	388
6.	Mont-Ngafula	178	49,9	179	50,1	357
7.	Ngaliema	209	53,5	182	46,5	391
Total		1437	53,9	1229	46,1	2666 (29,5)
Mont-Amba						
1.	Kisenso	236	62,6	141	37,4	377
2.	Lemba	198	54,2	167	45,8	365
3.	Limete	192	53,2	169	46,8	361

4.	Matete	219	57,7	160	42,3	379
5.	Ngaba	198	52,3	181	47,7	379
	Total	1043	56	818	44	1861 (20,6)
Tshangu						
1.	Kimbanseke	221	56,7	169	43,3	390
2.	Maluku	224	57,3	167	42,7	391
3.	Masina	239	62,6	143	37,4	382
4.	N'djili	229	63,3	133	36,7	362
5.	Nsele	241	61,5	151	38,5	392
	Total	1154	60,2	763	39,8	1917 (21,2)

The variables of interest were sociodemographic (age: age groups were composed of six classes; sex: male and female; education level: none, primary, secondary and higher and/or university; occupation: employed (yes) or unemployed (no); marital status: single, married, divorced or separated and widowed; monthly income: low income (less than \$200) and middle or high income (greater than or equal to \$200); number of dependents: no dependents, with fewer than five dependents and with at least five dependents, as well as the religion of Catholic, Protestant, Kimbanguist, Muslim, revivalist, and others including Jehovah's Witnesses, Latter-day Saints, animists, etc.) and the notion of consumption of psychoactive substances (beer, whiskey, imported and traditional hard liquors, wine, smoking and inhaling tobacco, cannabis and other illicit drugs, as well as psychotropic self-medication).

Participants read the questionnaire (for those who could read), and their consent was requested and they were informed of confidentiality. Data were collected using a custom research questionnaire (see Appendices). They were first organized in Microsoft Excel 2013 software and then subjected to analyses, which consisted of generating frequencies to determine the mean, standard deviation, and confidence interval.

Operational Definitions

- ❖ **Prevalence:** The proportion of individuals affected by a given disease or health event in a defined population at a given point in time (point prevalence) or over a given period (period prevalence). It is used to assess the frequency of a health problem in a population [12,13].
- ❖ **Monthly Income:** basic salary or all income received during a month before any deductions [14,15].
- ❖ **Psychoactive Substance:** is a substance capable of altering an individual's mental functioning when consumed, potentially leading to changes in mood, perceptions, level of consciousness, behavior, and various physiological and psychological functions [1-10].

Results

Sociodemographic Characteristics

Age

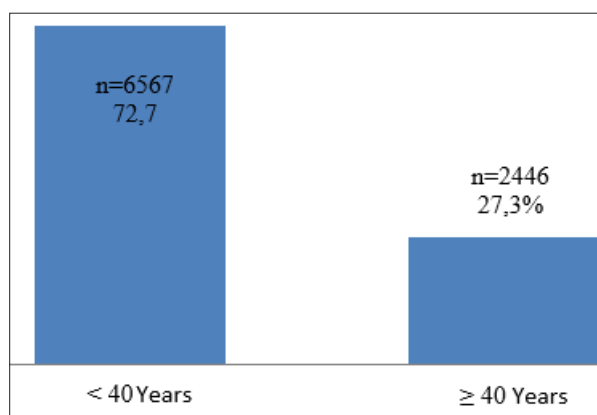


Figure 1: Distribution of the Study Population by Age

The mean age of the subjects was 31.5 ± 13.9 years. The majority (72.7%) were under 40 years of age.

Sex

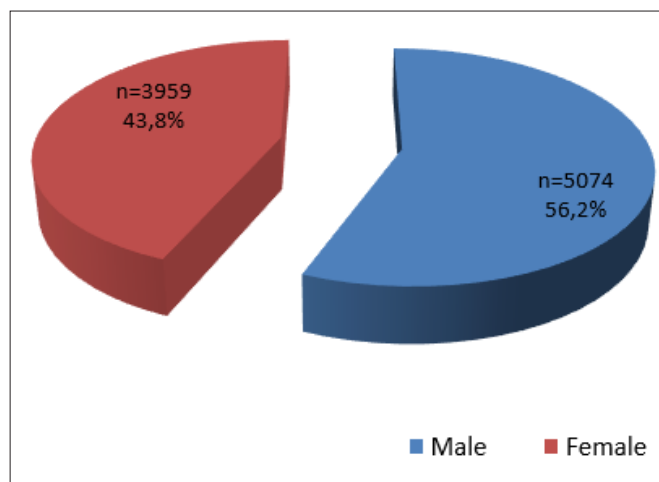


Figure 2: Distribution of the Study Population by Sex

Male subjects were the majority (56.2%), with a sex ratio of 1.28 M/F.

Level of Education

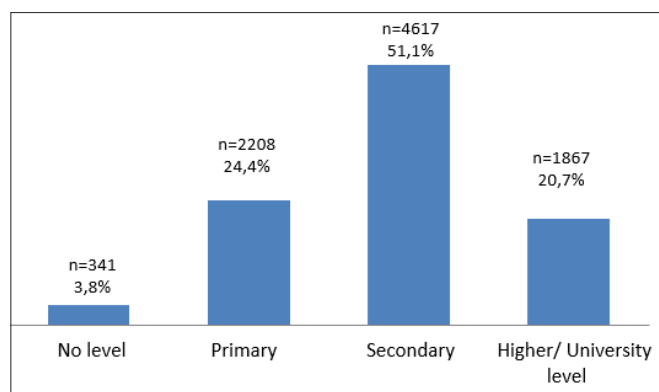


Figure 3: Distribution of the Study Population by Level of Education

More than half of the Kinshasa population had a secondary education (51.1%).

Occupation

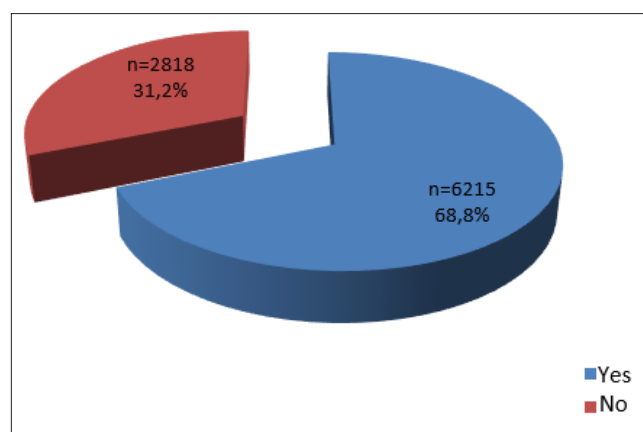


Figure 4: Distribution of the Study Population by Occupation

More than two-thirds of the Kinshasa population had an occupation (68.8%).

Table 2: Distribution of the Study Population by Age Group, Marital Status, Monthly Income, Number of Dependents and Religion

Group Age (year)	N	%
≤19	2027	22,4
20 – 29	3501	38,8
30 – 39	1071	11,9
40 – 49	1047	11,6
50 – 59	842	9,3
≥60	545	6,0
Marital Status		
Célibataire	5711	63,2
Marié	3006	33,3
Divorcé	214	2,4
Veuf	102	1,1
Monthly Income		
<200\$	6704	74,2
≥200\$	2329	25,8
Number of Dependents		
Aucun	2906	32,2
<5	4530	50,1
≥5	1597	17,7
Religion		
Catholic	2223	24,6
Protestant	1628	18,0
Kimbanguist	1214	13,5
Muslim	257	2,8
Revival churches	3186	35,3
Others	525	5,8
Total	9033	100

The 20-29 age group was the most represented (38.7%), nearly two-thirds of the Kinshasa population were single (63.2%), nearly three-quarters had a low monthly income (74.2%), more than half had an average of five dependents (50.1%), and more than a third attended Revival churches (35.3%).

Table 3: Distribution of the Study Population According to Psychoactive Substance (PS) Consumption

Beer	N	%
Oui	5894	65,3
Non	3139	34,7
Whisky		
Oui	2714	30,1
Non	6319	69,9
Imported Hard Liquor		
Oui	2344	26,0
Non	6689	74,0

Traditional Hard Liquor		
Oui	2803	31,0
Non	6230	69,0
Wine		
Oui	2968	32,9
Non	6065	67,1
Smoking Tobacco		
Oui	2193	24,3
Non	6840	75,7
Snuff		
Oui	2582	28,6
Non	6451	71,4
Cannabis and other Illicit Drugs		
Oui	963	10,7
Non	8070	89,3
Self-Medicated Psychotropic Drugs		
Oui	443	4,9
Non	8590	95,1
Total	9033	100

Beer was the most consumed alcoholic beverage (65.3%), followed by wine (32.9%), traditional hard liquor (31%), whisky (30.1%), imported hard liquor (26%), snuff (28.6%), smoking tobacco (24.3%), cannabis and other illicit drugs (10.7%), and finally, self-medicated psychotropic drugs (4.9%).

Discussion

General Sociodemographic Characteristics of the Study Population

Age and Sex

The mean age of the subjects was 31.5 ± 13.9 years, with a sex ratio of 1.28 (M/F).

The literature on the age and sex of study subjects related to the use of psychoactive substances tends to focus on younger people and males worldwide [16-22]. Regarding the mean age of users, several studies report an age ranging between 12 and 64 years and overall, men represent approximately three-quarters of cannabis and/or opiate users [16-22].

In contrast, women constitute nearly half of amphetamine and pharmaceutical stimulant users [16-22]. A French study, noting the average age of 21, showed that more than half have used at least one PAS during their lifetime [16]. Cannabis was used by more than half of young people, followed by poppers and nitrous oxide by more than a quarter of young people [16]. In Botswana, the majority of PAS users were first experienced between the ages of 15 and 18 [17]. In Rwanda, the average age of first PAS use is 11.4 years [18]. Two-thirds of boys are significantly more likely to use these substances than girls [18].

In Morocco, the average age of first use of ASPs is 14.6 years [19]. Boys are more likely to use these substances than girls [19]. In Nigeria, more than three-quarters of students have used ASPs in their lifetime [20]. Alcohol is the most commonly used substance [20]. Men and women have similar rates of use [20]. A meta-analysis of 68 international studies shows that the gender gap in alcohol consumption has narrowed for those born after 1976 [21].

Men born between 1991 and 2000 were only 1.1 times more likely to consume alcohol than women of the same age group [21]. However, in Slovenia, 15-year-old girls outperformed boys in some drinking categories [22]. This difference could be explained by a combination of social, psychological, and cultural factors [22].

Convergence of gender behaviors, mental health challenges, urban influences, and gender role pressures contribute to this trend [22].

Education level

More than half of Kinshasa’s population had a secondary education. Several scientific studies reveal the low level of education among SPA consumers [23-27]. Indeed, in Morocco, secondary education was mentioned in a study conducted among secondary school students [23]. In Rwanda, research has shown that young people who have dropped out of school or never attended school have higher rates of substance use [24]. In Nigeria, a study found that individuals with a tertiary level of education had a significantly lower likelihood of using ASPs compared to those with no formal education [25].

However, in both Ethiopia and Cameroon, secondary and higher education students have been cited as contributing factors in the use of ASPs [26-27]. In Ethiopia, peer pressure and socialization, family history and local consumption culture, stress management and performance enhancement, as well as the accessibility and low cost of certain ASPs, such as khat, alcohol, and tobacco, are readily available and affordable, facilitating access for students [26]. In Cameroon, the reasons cited include: stress relief and pleasure seeking, peer influence, socioeconomic factors (students with a higher monthly allowance were more likely to use substances, likely due to a greater financial capacity to acquire them), and cultural acceptance of alcohol: alcohol consumption is deeply rooted in social customs and is often associated with maturity and prestige, which can encourage its consumption among young people [27].

For both countries, gender (men are generally more likely to use substances, partly due to social norms that are more tolerant of these behaviors in men), autonomy and family distance (entering university offers greater freedom, removing students from parental supervision, which can encourage substance experimentation), and lack of awareness (limited knowledge of the harmful effects of psychoactive substances can lead to an underestimation of the risks associated with their use) are the factors that explain this trend [26-27].

Indeed, Demographic and Health Surveys (DHS) stipulate that education level influences psychoactive substance use, but this relationship is modulated by various factors such as family environment, peer pressure, and socioeconomic status [28-30].

Occupation

More than two-thirds of Kinshasa’s population had a job. Several studies highlight the impact of the informal sector in Kinshasa, which appears to play a central role in the urban economy [31-34]. The informal sector includes economic activities that are not registered or regulated by the state [31-34]. In Kinshasa, it represents a major source of employment for a rapidly growing urban population [31-34]. For many Kinshasa residents, it is the main source of livelihood [31-34]. Several factors influence the development of the informal sector in Kinshasa: high unemployment in the formal sector, weak state structures to regulate and formalize the economy, rapid and uncontrolled urbanization, and corruption and bureaucracy that discourage business formalization [31-34]. Nationally, the informal sector employs approximately ninety-one percent of the employed population, and the formal sector (public and private combined)

therefore represents approximately nine percent of total employment [31-34].

In Kinshasa, the informal sector accounts for the majority of jobs. The public sector employs nearly twenty percent of the workforce, while the formal private sector accounts for only ten percent of employment (31.4%). In 2022, the informal sector accounted for nearly forty-two percent of the DRC's gross domestic product (GDP), making it one of the highest rates in Africa (31.4%).

The informal sector is largely composed of micro-enterprises, often unregistered and escaping state regulation [31-34]. The informal sector also acts as a social buffer, providing employment opportunities in a context of high unemployment, particularly among young people. Alcohol sellers and consumers are widespread throughout the Congolese territory in general and in Kinshasa in particular [31-34].

Marital Status

Nearly two-thirds of Kinshasa's population were single.

These results contradict data from the 2007, 2013, and 2024 DHS, which indicate that more than half of the adult population is married [28-30]. The literature indicates that in Kinshasa, single people are more numerous [31,32]. This situation could be explained by economic, sociocultural, and demographic factors [31,32].

The majority of the adult population in Kinshasa is not legally married, especially in the 15-35 age group [31,32].

Women marry earlier than men on average, but many men remain single longer, delaying or avoiding marriage for several reasons, including economic: the high cost of marriage (dowry, celebrations, housing) hinders formal unions; unemployment and job insecurity make men reluctant to assume the responsibilities of marriage; women, increasingly educated, choose to wait for stability before marrying; sociocultural: in cities, traditional marriage norms are less pressing, with a rise in common-law unions, cohabitation, socially accepted premarital sexuality, and growing female autonomy.

More and more women are prioritizing their education and careers; demographic: in certain age groups, there are more women than men, which creates a gap in formal marriages, and urban lifestyles make relationships more unstable [31,32].

Monthly Income

Nearly three-quarters of the Kinshasa population had a low monthly income.

These data corroborate the literature reporting low monthly income levels among young Congolese people, especially in the informal sector [32-36].

Number of Dependents

More than half of Kinshasa's population had an average of five dependents.

According to DHS data, the average household size is 5.4 people, with 5.9 people in urban areas and 5.2 people in rural areas [28-30].

Religion

More than a third of the Kinshasa population attends Revival churches. Current trends suggest that the Revival church occupies a prominent position in terms of representation [28-30].

Psychoactive Substance Use by the Study Population

During the current study, more than half of the subjects consumed beer, followed by wine by a third, traditional hard liquor and whiskey

by nearly a third, imported hard liquor and snuff by more than a quarter, smoking tobacco by nearly a quarter, and cannabis and other illicit drugs by a tenth of the population. Finally, self-medicated psychotropic drugs were consumed by nearly five percent of the population.

The literature indicates that alcohol is the most widely consumed substance in the world in general and in Kinshasa in particular, followed by tobacco, and then illicit drugs such as cannabis [37-41]. A 2008 survey revealed that 33.6% of secondary school students aged 13 to 15 in Kinshasa and Lubumbashi used tobacco [42]. The highest rates of tobacco use are recorded in Europe, mainly in Romania and Bulgaria, at 40%; then comes Africa, primarily South Africa and Egypt, at 25%, followed by Algeria, Morocco, and Tunisia, at between 15 and 20% [43-45].

In the DRC, this rate varies between 12 and 15% among men and 2% among women [43-45]. The highest alcohol consumption rates are recorded in Europe, mainly in Russia, at 20 to 25%; followed by the Americas with 7 to 18% in Canada and 9 to 14% in the USA [45,46]. A study shows that there is a new trend that is similar to the results of the present study [47,48]. The highest rates of illicit drug consumption (mainly cannabis) are recorded in the Americas, mainly in the United States and Canada, at 25% and 21% respectively; then comes Africa, which is mainly Nigeria with 14.3%, Ethiopia with 12.6%, while in Ghana this rate varies between 8 and 17% [49,50]. In Europe, this rate is 12.6% in Spain, 10.8% in France, and 8.8% in the United Kingdom and Germany [49, 50]. One study indicates that 75.86% of ASD users consume cannabis [39-41]. Its widespread availability and relatively low cost make it a commonly used drug [39-41].

Approximately 11.2% of ASD users use opiates (heroin) [39-41]. Cocaine is used by approximately 3.44% of ASD users [39-41]. It is often used in a homemade manner, sometimes mixed with other substances to modify its effects [39-41]. In addition, benzodiazepines, particularly diazepam, are also widely used, often in combination with cannabis to amplify the effects [39-41]. Approximately 25% of ASD users use benzodiazepines. Barbiturates are used by approximately 6.9% of ASD users [39-41].

Strengths and Limitations of the Study

The strength of this study lies in the fact that it is one of the few to address this important aspect of the prevalence of SPA use in Kinshasa, Democratic Republic of Congo. It could serve as a pioneering baseline study for future studies. With this large, comprehensive sample, this work will generate particular interest in the holistic care of SPA users in the Democratic Republic of Congo in general and in Kinshasa in particular.

As a limitation, this cross-sectional and descriptive study will not allow for generalization of the data.

Conclusion

The prevalence of psychoactive substance use in Kinshasa is high. This situation primarily affects young, employed, high-school-educated men who are single, have an average of five dependents, have a low monthly income, belong to the revivalist church, and primarily consume beer. Systematic holistic care for Kinshasa's youth, including awareness-raising among all segments of the population, training healthcare providers and opinion leaders, and providing support, would prevent several consequences associated with psychoactive substance use.

Conflicts of Interest

The authors have declared no conflicts of interest.

Author Contributions

Justin Muilu Pila, Patrice Milambo Kapia, Jules Kuzeye Nakafwako, and Gilbert Mananga Lelo designed the study, conducted the analyses, and wrote the manuscript. Exaucé Black Bangala Ndombe, Dacosta Dioya Ngina, Bovic Kanda Tshimanga, Mechack Badabi Zingale, Bénédicte Nanga Tshamala, Paul Matungulu Kisungu, Léon Mfutila Ndele, Victorine Lupatu Mputu, Diane Missi Nyota, Orchi Nzimba Kasomba, Béni Muilu Pila, Armand Nkiambilumuene Pila, and Papy Ngokumu Nsele conducted data collection and manuscript review.

All authors participated in, read, and approved the final, revised version.

Kasomba, Béni Muilu Pila, Armand Nkiambilumuene Pila, and Jean-Michel Mavungu Mbuku conducted data collection and manuscript review.

All authors participated in, read, and approved the final, revised version.

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