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(Research Article)

Knowledge, Attitudes and Practices (KAP) of Ngaliema residents regarding sanitation: A case study in Ngomba-Kikusa, Kinshasa, DR Congo

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Abstract

Background: The persistent unsanitary conditions observed in several neighborhoods of Kinshasa, particularly in Ngomba-Kikusa (Ngaliema municipality), constitute a major risk to public health and the environment. This study aims to assess the Knowledge, Attitudes and Practices (KAP) of households regarding sanitation in order to identify the main determinants influencing sanitary behaviors.

Methodology: A descriptive cross-sectional survey was conducted from May 16 to June 16, 2025, among 230 adult residents (non-probability sample). Data collected through a questionnaire were analyzed using SPSS 25.0 (descriptive statistics: frequencies, means; inferential statistics: χ^2 test and binomial logistic regression). Internal validity was confirmed (Cronbach's $\alpha = 0.74$; response rate = 83%).

Results: The average knowledge score was 5.8/10, and 31.7% of respondents were unaware of the link between waste and disease. Although 72.2% recognized that neighborhood cleanliness is a collective responsibility, 45.2% still relied on illegal dumping sites. Only 15.7% benefited from a public waste collection service. Regression analysis showed that education level ≥ secondary (OR=4.14), access to drinking water (OR=2.86), and good sanitary knowledge (OR=2.64) were significant predictors of good sanitation practices.

Conclusion: The findings highlight a paradox between attitudes and practices, largely influenced by inadequate infrastructure and limited training. An integrated approach combining targeted community education, improved access to water, and the establishment of local waste management systems is essential to address the public health emergency. This study provides a scientific basis for sanitation policies adapted to vulnerable neighborhoods in Kinshasa.

Keywords: Urban sanitation; KAP study; Household waste management; Environmental health; Kinshasa; Socio-economic determinants; Logistic regression.

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1 Introduction

Urban sanitation constitutes one of the fundamental pillars of public health, environmental protection, and sustainable development, particularly in cities of low- and middle-income countries. According to the World Health Organization (WHO, 2023), the lack of sanitation services and solid waste management remains a major contributor to morbidity and mortality, particularly through the spread of waterborne and vector-borne diseases. In rapidly growing African cities, these challenges are exacerbated by rapid and often unplanned urbanization, as well as by the weakness of basic infrastructure.

Kinshasa, the capital of the Democratic Republic of the Congo, clearly illustrates this structural sanitation crisis. The city faces uncontrolled accumulation of household solid waste, limited coverage of collection services, and urban governance challenged by demographic and socio-economic pressures (UN-HABITAT, 2022; Ministry of Environment DRC, 2024). In this context, many peripheral and semi-urban neighborhoods evolve in an unsanitary environment characterized by illegal dumping sites, blocked drainage systems, soil degradation, and increasing health risks.

The Ngaliema municipality, and particularly the Ngomba-Kikusa neighborhood, fully reflects this situation. The absence or insufficiency of structured waste management systems, combined with limited access to safe drinking water and sanitation, exposes local populations to precarious living conditions. These conditions favor the occurrence of diseases such as cholera, diarrhea, malaria, and other environment-related illnesses, while contributing to the deterioration of living conditions and the socio-economic marginalization of affected households (UNICEF DRC, 2023).

While infrastructure constraints represent a major determinant of unsanitary conditions, individual and collective behaviors also play a central role in the persistence of the problem. Indeed, sanitation practices adopted by households are closely linked to their knowledge, attitudes, and perceptions of health risks.

The Knowledge, Attitudes and Practices (KAP) framework is widely used in public health to analyze these interactions and identify drivers of behavioral change (Ajzen, 1991; Mbuyi & Kabamba, 2023). Several studies conducted in Sub-Saharan Africa have shown that insufficient health knowledge, ambivalent attitudes, and lack of viable alternatives lead to inappropriate practices, even when the desire to maintain a clean environment is expressed (Ndiaye et al., 2022; Adeyemi et al., 2021).

In the context of Ngomba-Kikusa, few recent empirical data systematically document residents' knowledge, attitudes and practices regarding sanitation, as well as the socio-economic and environmental factors influencing them. This gap limits the ability of policymakers and community actors to design appropriate, effective, and sustainable interventions.

Therefore, this study aims to assess the knowledge, attitudes and practices (KAP) of residents of the Ngomba-Kikusa neighborhood in the Ngaliema municipality regarding sanitation. It also seeks to identify determinants associated with the adoption of adequate sanitation practices, in order to propose evidence-based intervention strategies.

By providing a contextualized and quantitative analysis of KAP, this research aims to contribute to the development of integrated sanitation strategies that consider behavioral, educational and structural dimensions and that can sustainably improve environmental hygiene and the quality of life of the concerned populations.

2 Methodological approach

2.1 Type and Study Setting

This research adopts a cross-sectional, descriptive and analytical design, within the field of environmental public health. This type of design is particularly appropriate for the simultaneous analysis of knowledge, attitudes and practices (KAP) within a population, as well as for identifying factors associated with observed sanitary behaviors.

The study was conducted in the Ngomba-Kikusa neighborhood, located in the Ngaliema municipality, west of the city of Kinshasa (Democratic Republic of the Congo). This area was selected because of the persistence of marked unsanitary conditions, characterized by informal household waste management, limited sanitation services, and unequal access to safe drinking water.

Data collection took place from May 16 to June 16, 2025, corresponding to a period of relative climatic stability, thereby limiting biases associated with seasonal variations that could influence sanitation practices.

2.2 Study Population and Selection Criteria

The target population consisted of all adult residents permanently living in Ngomba-Kikusa.

Inclusion criteria were:

- Individuals aged 18 to 62 years
- Residents present at the time of the survey
- Ability to communicate in French or Lingala
- Provision of informed consent

Excluded were:

- Minors
- Temporary visitors to the neighborhood
- Individuals refusing to participate in the survey

This selection ensured that information was obtained from respondents directly involved in household environmental management.

2.3 Sampling Method and Sample Size

A non-probability convenience sampling method (also referred to as accidental sampling) was used to recruit participants. This methodological choice was justified by logistical, financial and time constraints, which are common in studies conducted in precarious urban settings.

A total of 230 participants were included in the analysis.

Although this sampling method limits generalization of the results to the entire population of Ngomba-Kikusa, it nevertheless provides a relevant and contextualized picture of KAP within the studied group.

To improve the interpretability of results, a detailed description of respondents' sociodemographic characteristics (age, sex, education level, access to water) was systematically conducted.

2.4 Data Collection Tools and Procedures

Data were collected using a structured questionnaire, administered face-to-face by trained interviewers.

The questionnaire included closed and semi-open questions, organized into four main sections:

- Sociodemographic characteristics
- Knowledge related to sanitation and health risks
- Attitudes toward cleanliness and collective responsibility
- Actual waste management and hygiene practices

The questionnaire was developed based on KAP conceptual frameworks used in environmental public health and underwent pre-testing to ensure clarity, cultural relevance and internal consistency.

Adjustments resulting from this pre-test improved item comprehension and reduced measurement bias.

2.5 Data Processing and Analysis

Collected data were coded, entered and analyzed using SPSS version 25.0, complemented by exploratory analyses in R. Statistical analysis combined descriptive and inferential methods.

Descriptive statistics (frequencies, percentages, means, standard deviations) were used to characterize respondents' knowledge, attitudes and practices.

Associations between sociodemographic variables and sanitation practices were explored using the Chi-square (χ^2) test.

A binomial logistic regression analysis was also conducted to identify independent determinants of adequate sanitation practices.

Results were expressed as odds ratios (OR) with 95% confidence intervals, indicating the strength and significance of observed associations.

2.6 Validity Criteria and Ethical Considerations

Methodological quality was evaluated through several indicators.

The response rate, set at a minimum threshold of 80%, reached 83%, indicating good acceptance of the survey within the community.

The internal consistency of the questionnaire, measured by Cronbach's alpha, was 0.74, indicating acceptable reliability.

From an ethical perspective:

- Participation was voluntary
- Informed consent was obtained
- Anonymity and confidentiality were strictly guaranteed

These procedures complied with ethical principles of public health research.

3 Results and discussion

3.1 Presentation of Results

3.1.1.Sociodemographic Characteristics of Respondents

A total of 230 residents of Ngomba-Kikusa participated in the study.

The surveyed population shows a relatively balanced sex distribution, with a slight male predominance (52.2%).

The most represented age group is 31–45 years (42.6%), corresponding to the population most active in household management.

Regarding education level:

- 50% reached secondary education
- 23% had university education

Access to drinking water remains limited, with only 32.6% of households connected to the public network.

Table 1 Sociodemographic Profile of Respondents (n = 230)

Variable	Category	Number (n)	Frequency (%)
Sex	Male	120	52.2
	Female	110	47.8
Age group	18–30 years	85	37.0
	31–45 years	98	42.6
	46–62 years	47	20.4
Education level	Primary	62	27.0
	Secondary	115	50.0
	University	53	23.0
Access to water	Public network	75	32.6
	Well, /Borehole	105	45.7
	Other	50	21.7

Source: KAP Survey, Ngomba-Kikusa, 2025 (SPSS 25.0)

3.2 Descriptive Analysis of Knowledge, Attitudes and Practices (KAP)

3.2.1.Knowledge of Sanitation-Related Health Risks

Knowledge assessment reveals an overall moderate level, with a mean score of 5.8 ± 2.1 out of 10.

Nearly one-third of respondents (31.7%) do not recognize the link between poor waste management and diseases such as cholera or diarrhea.

However, 89.6% recognize the importance of handwashing in disease prevention.

Table 2 Level of Knowledge of Health Risks

Knowledge Indicator	Yes (%)	No (%)
Link between waste and diseases	68.3	31.7
Importance of handwashing	89.6	10.4
Average knowledge score (/10)	5.8 ± 2.1	—

3.2.2.Residents' Attitudes Toward Sanitation

Declared attitudes are generally favorable toward collective cleanliness.

Indeed:

- 75.2% believe sanitation is a shared responsibility
- 12.6% still consider it acceptable to throw waste in the street

This indicates the persistence of social norms tolerant of unsanitary behavior.

Table 3 Attitudes Toward Collective Responsibility

Attitude	Agree (%)	Neutral (%)	Disagree (%)
"Neighborhood cleanliness is everyone's responsibility"	75.2	15.7	9.1
"Throwing waste in the street is acceptable"	12.6	8.3	79.1

3.2.3.Household Sanitation Practices

- Observed practices remain largely inadequate.
- The main method of waste disposal is illegal dumping (45.2%), followed by burning (30.4%).
- Only 15.7% benefit from municipal waste collection services, which are often irregular.
- The average reported handwashing frequency is 3.2 ± 1.5 times per day, indicating variable hygiene practices.

Table 4 Household Waste Disposal Methods

Method	Frequency (%)
Illegal dumping	45.2
Burning	30.4
Municipal collection	15.7
Burial	8.7

3.3 Inferential Analyses

3.3.1.Association Between Education Level and Waste Disposal Practices

The Chi-square test shows a statistically significant association between education level and waste disposal methods ($p = 0.003$).

Households with university education rely more on organized waste collection, while less educated households tend to use illegal dumping sites.

Table 5 Association Between Education Level and Waste Disposal Methods

Education Level	Illegal Dumping (%)	Burning (%)	Collection (%)	p-value
Primary	58.1	33.9	8.0	0.003
Secondary	42.6	31.3	26.1	
University	30.2	24.5	45.3	

3.3.2.Determinants of Good Sanitation Practices

- Binomial logistic regression identified three major determinants of adequate sanitation practices.
- Participants with secondary education or higher are significantly more likely to adopt good practices (OR = 4.14).

Similarly:

- Access to drinking water (OR = 2.86)
- High sanitation knowledge (OR = 2.64)

are significant predictors.

Table 6 Logistic Regression Model of Good Sanitation Practices

Variable	B	p-value	OR [95% CI]
Education level ≥ secondary	1.42	0.008	4.14 [1.45–11.81]
Access to drinking water	1.05	0.032	2.86 [1.09–7.51]
Knowledge score ≥ 6/10	0.97	0.041	2.64 [1.04–6.71]
Age > 45 years	−0.62	0.182	0.54 [0.22–1.33]
Sex (female)	0.31	0.412	1.36 [0.65–2.85]

4 Conclusion

This study aimed to analyze the knowledge, attitudes and practices (KAP) of residents of the Ngomba-Kikusa neighborhood regarding sanitation, in order to identify determinants of risky behaviors and inform strategies for improving environmental hygiene.

The results reveal insufficient health knowledge, despite generally favorable attitudes toward cleanliness and collective responsibility.

This contrast highlights a significant gap between perceptions and actual practices, reflecting persistent structural, social and economic constraints.

Observed sanitation practices remain largely inadequate, characterized by frequent illegal dumping and waste burning, exposing populations to significant health risks, particularly waterborne and vector-borne diseases.

Inferential analyses showed that:

- Education level
- Access to drinking water
- Sanitation knowledge

are major determinants of appropriate sanitation practices.

These results confirm that the unsanitary conditions of Ngomba-Kikusa cannot be attributed solely to individual behaviors but mainly result from structural deficits in WASH infrastructure combined with insufficient health education.

Therefore, any intervention aiming to sustainably improve sanitation must integrate educational, institutional and infrastructural dimensions simultaneously.

Compliance with ethical standards

Disclosure of conflict of interest

There are no conflicts of interest to be disclosed.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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