

BMJ Open Evaluation of needs and supply of emergency care in Kinshasa, Democratic Republic of Congo: a cross-sectional household survey

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ABSTRACT

Objective Emergency care can address over half of deaths occurring each year in low-income countries. A baseline evaluation of the specific needs and gaps in the supply of emergency care at community level could help tailor suitable interventions in such settings. This study evaluates access to, utilisation of, and barriers to emergency care in the city of Kinshasa, Democratic Republic of Congo.

Design A cross-sectional, community-based household survey.

Setting 12 health zones in Kinshasa, Democratic Republic of Congo.

Participants Three-stage randomised cluster sampling was used to identify approximately 100 households in each of the 12 clusters, for a total of 1217 households. The head of each household or an adult representative responded on behalf of the household. Additional 303 respondents randomly selected in the households were interviewed regarding their personal reasons for not accessing emergency care.

Primary outcome Availability and utilisation of emergency care services.

Results In August 2021, 1217 households encompassing 6560 individuals were surveyed (response rate of 96.2%). Most households were economically disadvantaged (70.0% lived with <US\$100 per person per month) and had no health insurance (98.4%) in a country using a fee-for-service healthcare payment system. An emergency visit in the last 12 months was reported in 52.6% of households. Ambulance utilisation was almost non-existent (0.2%) and access to health facilities for emergencies was mostly by walking (60.6% and 56.7% by day and night, respectively). Death in the last 12 months was reported in 12.8% of households, of which 20.6% occurred out-of-hospital with no care received within 24 hours prior to death. Self-medication (71.3%) and the expected high cost of care (19.5%) were the main reasons for unmet emergency care needs.

Conclusion There is a substantial gap in the supply of emergency care in Kinshasa, with several unmet needs and reasons for poor access identified.

INTRODUCTION

The 2019 Global Burden of Disease Report showed increases in injury and

STRENGTHS AND LIMITATIONS OF THE STUDY

- ⇒ The household survey is a well-established method of evaluating health issues and perceptions of the primary consumers of healthcare.
- ⇒ Using a household survey methodology to gauge the needs and utilisation of emergency care in a community is an innovative approach and builds on recent similar surveys in South Africa and Cameroon.
- ⇒ The systematic clustering approach and the large sample size from both urban and periurban areas (1217 households) make the study results to be likely broadly representative of the city's heterogeneous population.
- ⇒ The subjective nature of participants' responses, including their biases and possible misunderstanding of some survey terminology, are limitations to be considered when interpreting results.
- ⇒ The singularity of the study setting (city of Kinshasa) may limit in some respects the generalisability of a few findings to other low-income settings.

non-communicable diseases, with the greatest proportion in low-income and middle-income countries (LMICs).¹ Available data indicate significant mortality in these countries, particularly in sub-Saharan Africa where a substantial proportion of deaths occur in the acute phase of illness or injury.² Injuries and other time-sensitive illnesses are significant contributors to premature mortality and disability, and are the result of inadequate prehospital care.³ Of the 45 million deaths every year in LMICs, 54% are due to conditions that emergency care can address.⁴

Despite evidence showing the positive impact of emergency care on patients outcomes,⁵ most LMICs lack organised emergency care systems (ECS), therefore, suffer substantial preventable death and disability.^{6–8} A robust ECS is the common safety net that provides lifesaving interventions regardless of the cause of an acute condition.⁹ This is

why the 72nd World Health Assembly urged member states to prioritise ECSs for Universal Health Coverage.¹⁰ Despite concerning health indicators,^{11–14} the Democratic Republic of Congo (DRC) has no formal Emergency Medical Services (EMS). While there is a current drive for its development, little is known about the specifics of the demand and supply of emergency care at community level in LMICs. Appropriate and sustainable interventions require a better understanding of shortcomings, best obtained by using a consumer-based method of health needs assessment that includes the primary beneficiary, the community.

The aim of this study is to gain an understanding of the nature and level of the demand and use of emergency care as perceived by community members in Kinshasa, particularly its utilisation and barriers to access.

METHODS

Study design

A community-based cross-sectional household survey.

Study setting

The study was conducted in 2021 in Kinshasa, the capital city of DRC, home to almost 15 million people.¹⁵ Its administrative boundaries cover a vast area, and a large section of the city's land is rural in nature.¹⁶ The demographic structure of residents of urban suburbs and periurban areas (PUAs) is representative of the DRC as a whole. Kinshasa has a multiethnic and mostly young population faced with the same socioeconomic challenges as the rest of the nation.¹⁶

The DRC is a vast country located in Central Africa, with an estimated population of 90 million. Its gross domestic product (GDP) per capita (US\$580.7) is among the lowest in sub-Saharan Africa; an estimated 72% of the population lives below the poverty line.¹¹ The overall state of healthcare in the country remains concerning; most indicators are worrying.^{12 15 17} The country's life expectancy at birth is 59 years (male)/62 years (female) and the under-five mortality rate is 98 per 1000 live births.¹² The probability of dying between 15 and 60 years is at 281/232 male/female per 1000 population. The malaria mortality is one of the highest in the world.¹³ Though declining, the country's maternal mortality ratio is still high at 693 per 100 000 live births,¹² a key indicator of the inability to adequately manage obstetric emergencies. Road traffic collisions are an important cause of injury-related disability and deaths in the country.¹⁴ The DRC total expenditure on health per capita is low at US\$32, 4.3% of GDP.¹² There are few public healthcare facilities, most of which are understaffed and under-resourced. The country uses the fee-for-service model, leading to delays in care and high out-of-pocket expenditure for most citizens. The challenges regarding optimal supply of healthcare are more pronounced regarding emergency care. There is no formal EMS system to provide out-of-hospital care and the few existing ambulances are poorly

equipped and staffed with untrained personnel. There is no universal access number for patients to call and connect with EMS. There is a shortage of skilled emergency care providers and emergency units struggle to provide the full breadth of essential services; resources and infrastructure are lacking.¹⁸ The alternative is the private healthcare sector, unaffordable for the majority.

Study population and sampling methods

Cluster sampling was used to calculate the requisite sample size. Twelve of the city's 35 health zones (HZ) were selected for inclusion based on data of previous large surveys.¹⁹ A sample of 1060 households was generated with 5% absolute precision and 95% CI. A 10% non-response rate was considered as conservative based on similar household surveys on emergency care in LMIC.^{20 21} Multiple socioeconomic features differentiate residents of urban areas (UA) from those in PUA, and the data was stratified accordingly. A three-stage randomised cluster sampling was used to identify the households, starting with the health areas (HA) within the HZ, followed by streets within HA, and lastly, households. In each household, the head of household or his/her representative was subjected to a comprehensive questionnaire on emergency care. To obtain more accurate data on unmet needs, a second randomly selected adult present in the household was interviewed specifically regarding his/her own reasons for lack of access to emergency care, not those of other householders.

Survey protocol

The questionnaire used (online supplemental file 1) was adapted to the DRC context from similar surveys.^{20 21} It encompassed five sections: demographic information, socioeconomic background, healthcare utilisation in the past 12 months, death of a member of the household in the past 12 months and reasons for not accessing emergency care. A survey team of 12 experienced researchers fluent in the two majority languages of the area underwent a 2-day survey orientation for training, evaluation of competency in administering the protocol and piloting of the survey for refinement.

Patient and public involvement

Patients were not involved in any way. The public was not involved in the design, reporting or dissemination plans of our research.

Data collection and analysis

The survey questionnaire was hosted on the SurveyCTO platform.²² Randomly selected households were surveyed. Over 10 days, surveyors worked in demarcated HA blocks during working hours each weekday plus one Saturday, starting at a convenient household, and then interviewing every 10th adjacent household until a sample of approximately 100 households was reached. In cases where householders declined to participate or were all absent, surveyors moved to the next household immediately adjacent until they were able to conduct an interview, later

Table 1 Respondent demographics and household socioeconomic background

	Urban areas		Periurban areas		Total	
	n	%	n	%	n	%
	1016	83.48	201	16.52	1217	100
Gender						
Male	328	32.3	60	29.9	388	31.9
Female	688	67.7	141	70.1	829	68.1
Age (years)						
18–20	48	4.7	7	3.5	55	4.5
21–30	267	26.2	54	26.8	321	26.4
31–40	276	27.1	60	29.8	336	27.6
41–50	197	9.5	43	21.4	240	19.7
51–60	110	10.8	20	9.9	130	10.7
61–70	79	7.7	16	7.9	95	7.8
71+	39	3.8	1	0.5	40	3.3
Mean	40.1	-	39.0	-	39.9	-
Level of education						
None	15	4.8	4	2.00	19	1.6
Primary	86	8.4	26	12.9	112	10.0
Secondary	489	48.1	141	70.1	630	51.8
Tertiary	426	41.9	30	14.9	456	37.6
Employment						
Unemployed	471	46.4	131	65.2	602	49.5
Public servants	177	17.4	18	8.9	195	16.0
Private sector	120	11.8	14	6.9	134	11.0
Self-employed	152	14.9	21	10.4	173	14.2
Others	96	9.4	17	8.4	113	9.3
Household size						
1–2	105	10.3	9	4.5	114	9.4
3–4	280	27.6	80	39.8	360	29.5
5–6	327	32.2	78	38.8	405	33.3
7–8	170	16.7	23	11.4	193	15.9
9+	134	13.2	11	5.5	145	11.9
Median	5.49		4.98		5.37	
Total household income (US\$)						
<100	129	16.1	57	39.0	186	15.3
100–249	357	35.1	53	26.3	410	33.7
250–499	217	21.3	25	12.4	242	19.9
500–999	80	7.8	11	5.5	91	7.5
1000+	18	2.3	00	0.0	18	1.5
Couldn't say	215		55		270	
Householders with regular income						
No breadwinner	16	1.5	1	0.5	17	1.4
Single breadwinner	531	52.3	99	49.3	630	51.8
2 or more	469	46.2	101	50.2	570	46.8
Household primary language						
Lingala	716	70.5	137	68.1	853	70.1
Kikongo	4	0.4	0	0.0	4	0.3

Continued

Table 1 Continued

	Urban areas		Periurban areas		Total	
	n	%	n	%	n	%
	1016	83.48	201	16.52	1217	100
Swahili	14	1.3	1	0.5	15	1.2
Tshiluba	2	0.2	6	3.0	8	0.7
French	280	27.5	57	28.3	337	27.7
Dwelling ownership						
Owned	420	41.3	146	72.6	566	46.5
Rented	596	58.7	55	27.3	651	53.5
Dwelling standard						
With running water	558	54.9	19	9.5	577	47.4
With electricity	887	87.3	92	45.8	979	80.4
Health insurance						
Standard scheme	11	1.1	9	4.4	20	1.6
Informal/mutual plan	35	3.4	8	4.0	43	3.5
Employer hosp. plan	236	23.2	12	6.0	248	20.5

resuming the original selection of the systematic allocation. A consenting household head (or an adult representative) was asked a variety of questions about the needs and supply of emergency care in households while a second respondent was interviewed specifically about his/her reasons for not accessing emergency care. The verbal consent obtained from each participant was digitally marked on tablets. No survey responses were excluded. Responses were captured on password-protected tablets and uploaded daily on the secure server. Ten percent of saved surveys responses were randomly checked daily by a researcher for adequacy and ongoing quality assurance. The raw data were securely downloaded and stored on a password-protected computer. χ^2 test and Fischer's exact testing were used to determine statistically significant differences across groups (two-sided significance level of $p < 0.01$).

RESULTS

Demographics

In August 2021, 1217 households were surveyed in Kinshasa: 1016 in UA and 201 in PUA, encompassing 6560 individuals, with a response rate of 96.2%. Respondents were predominantly female (68.1%), mean age 39.9 years, with a rate of tertiary education significantly greater in UA than PUA (41.9% vs 14.9%, $p < 0.01$). Unemployment was predominant at 49.5%, higher in PUA than UA (65.2% vs 46.4%, $p < 0.01$). This correlated with a greater proportion of households living on <US\$100 in PUA compared with UA (39.0% vs 16.1%, $p < 0.01$). The average size of households was of 5.39 members and only 1.6% had formal health insurance (table 1).

Table 2 Emergency care utilisation

	Urban areas		Periurban areas		Total	
	n	%	n	%	n	%
	1016	83.48	201	16.52	1217	100
Routine visit of householders to a health facility in the last 12 months						
Total	247	24.3	34	16.9	281	23.1
Emergency visit of householders to a health facility in the last 12 months						
Total	513	50.5	127	63.2	640	52.6
Emergency visit by householder: Reason						
Pregnancy related	48	8.7	7	5.6	55	8.1
Infectious disease	300	54.1	76	60.8	376	55.4
Cardiovascular	56	10.1	9	7.2	65	9.6
Gastro-intestinal	50	9.0	4	3.2	54	4.4
Respiratory disease	27	4.9	4	3.2	31	4.6
Neurologic disease	15	2.7	0	0.0	15	2.2
Injury	20	3.6	1	0.8	21	3.1
Other/doesn't know	38	6.8	24	19.2	62	9.1
Emergency visit by householder: Satisfaction with care						
Not satisfied	29	5.2	5	4.0	34	5.0
Average	64	11.6	13	10.4	77	11.3
Satisfied	461	83.2	107	85.6	568	83.7
Ambulance calls for emergencies						
	3	0.2	0	0.0	3	0.2
Hospital admission of householder						
	279	27.4	85	42.3	364	30.1

Healthcare utilisation

Routine visits to health facilities were relatively low (23.1%) compared with emergency visits (52.6%), with infectious diseases being the reason in 60.0%. No meaningful data could be obtained on utilisation cost, waiting time or quality of care in ambulances due to the low rate of utilisation (0.2%). Moreover, 99.8% of respondents did not know which emergency number to call if a householder needed an ambulance. Private healthcare facilities were the most attended in UA (69.3% for day and 72.6% for night visits, respectively) while they were less visited in PUA (25.9% and 35.8% by day and night, respectively). The majority accessed care by walking (60.6% and 56.7% by day and night, respectively). Infectious diseases were the reason of visits in 55.4% of cases (tables 2 and 3).

Deaths in households

A total 155 deaths were reported for the 12 months prior to the study (12.8% of households), with UA and PUA equally affected. The deceased were much younger in PUA than UA (mean of 37.5 years vs 47.5 years, $p<0.01$). The deceased were not known to have any underlying chronic disease in 60.6% of cases; their deaths were thought to be due to an acute illness (including injury) in 56.4%. One out of five deceased did not receive any healthcare within

Table 3 Healthcare facility visit for emergency care

	Urban areas		Periurban areas		Total	
	n	%	n	%	n	%
	1016	83.48	201	16.52	1217	100
	Day	Night	Day	Night	% Day	% Night
In case of emergency in household: Type of health facility						
Public clinic	236	219	134	102	30.4	26.4
Public referral hospital	72	53	10	27	6.7	6.6
Private facility	704	738	57	72	62.6	66.5
Other	4	6	0	0	0.3	0.5
In case of emergency in household: Mean of transportation						
Walk	588	609	149	79	60.5	56.5
Motorbike	195	233	32	82	18.6	25.9
Public transport	151	64	7	13	13.0	6.3
Personal vehicle	89	90	0	16	7.3	8.7
Neighbour's vehicle	4	22	0	1	0.3	1.9
Other	2	8	0	0	0.1	0.6
In case of emergency in household: Cost of transportation						
US\$0.1–US\$2	906	824	188	120	90.0	77.0
US\$2.1–US\$5	51	108	6	52	4.7	13.0
US\$5.1–US\$10	25	25	46	19	5.8	3.6
US\$10.1–US\$20	6	13	1	9	0.5	1.8
>US\$20	2	6	1	14	0.2	1.6
Doesn't know	26	40	0	0	2.1	3.3

24 hours prior to death which occurred on the way to the health facility (43.8%) or at home (43.8%). There were no significant differences between UA and PUA in the reasons given for out-of-hospital deaths: distance to the health facility (38.7%); sudden death (19.3%) and self-medication (12.9%) (table 4).

Reasons for not accessing emergency care

There were 303 respondents interviewed to establish their personal access experiences. Their demographics were generally similar to first respondents, except for a younger age (mean of 35.6 years vs 39.9 years for first respondents). There was no significant difference between UA and PUA regarding unmet emergency care needs, with 44% and 43%, respectively, reporting having had a complaint requiring urgent treatment for which they did not seek care. Moreover, 60.9% said they behaved that way on more than one occasion. Self-medication was the main reason in both settings, but to a greater extent in UA than PUA (75.6% vs 44.4%, $p<0.01$), while the expected high cost of care was more predominant in PUA than UA (33.3% vs 17.4%, $p<0.01$) (table 5).

DISCUSSION

This study evaluated the needs and supply of emergency care in the low socioeconomic setting of Kinshasa, DRC.

Table 4 Death in the household

	Urban areas		Periurban areas		Total	
	n		n		n	%
	1016	83.48%	201	16.52%	1217	100%
Death in the households in the last 12 months						
Total	130	12.8	25	12.4	155	12.7
Age at death (years)						
0–5	14	10.7	6	24.0	20	12.9
6–10	2	1.5	1	4.0	3	0.2
11–20	16	12.3	0	0.0	16	1.3
21–30	6	4.6	5	20.0	11	0.9
31–40	14	10.7	3	12.0	17	1.4
41–50	8	6.1	2	8.0	10	0.8
51–60	20	15.4	1	4.0	21	1.7
61–70	22	16.9	3	12.0	25	2.0
71–80	21	16.1	3	12.0	24	1.9
81+	7	5.4	1	4.0	8	0.7
Mean	47.5		37.5		45.5	
Was known with chronic illness						
Yes	56	43.1	5	20.0	61	39.4
Type of illness which caused death						
Underlying chronic illness	48	36.9	10	40.0	58	37.4
Acute illness	28	21.5	5	20.0	33	21.3
Injury	16	12.3	4	16.0	20	12.9
Pregnancy related	4	3.0	1	4.0	5	3.2
Unknown cause	23	17.7	5	20.0	28	18.0
Other	11	8.4	0	0.0	11	7.1
Received care 24 hours prior to death?						
Yes	102	78.4	21	84.0	123	79.4
Where?						
Health centre	36	35.3	10	47.6	46	37.4
Public hospital	36	35.3	5	23.8	41	33.3
Private facility	27	26.5	6	28.6	33	26.8
Home	3	2.9	0	0.0	3	2.4
No	28	21.5	4	16.0	32	20.6
Reason?						
Distance to health facil.	10	35.7	2	50.0	12	37.5
Lack of transportation	1	3.6	0	0.0	1	3.1
Anticipated high cost	3	10.7	0	0.0	3	9.3
Self-medication	3	10.7	1	25.0	4	12.5
Chron. illness/ pal. care	2	7.1	1	25.0	3	9.3
Sudden death	6	21.4	0	0.0	6	19.0
Others	3	10.7	0	0.0	3	9.3
Out-of-hospital death?						
Yes	28		4		32	20.6

Continued

Table 4 Continued

	Urban areas		Periurban areas		Total	
	n		n		n	%
	1016	83.48%	201	16.52%	1217	100%
Where?						
Home	12	42.9	2	50.0	14	43.8
On the way to hospital	12	42.9	2	50.0	14	43.8
Other	4	14.2	0	0.0	4	12.4

The systematic clustering approach and the large sample size (1217 households; 1016 in UA and 201 in PUA) make the results to be likely broadly representative of the city’s heterogenic population. Two similar studies on emergency care needs in Cameroon²⁰ (LIC) and in South Africa²¹ (middle-income country) provided valuable comparison.

Our respondents were mostly female (68.1%), as it is often the case in African household surveys.^{20 23} Respondents were mostly heads of the households or their spouses (44% and 34.5%, respectively), which likely increases reliability of the information provided. Household size varied widely both in UA and PUA, with an average of 5.39 (Cameroon-6.7 and South Africa-5).^{20 21} Studies

Table 5 Second respondents reasons for not accessing emergency care

	Urban areas		Periurban areas		Total	
	n		n		n	%
	261	86.1%	42	13.9%	303	100%
Had a complaint requiring urgent treatment but DID NOT seek care at a health facility						
Yes	115	44.0	18	42.9	133	44.0
Pregnancy related	8	6.9	2	11.1	10	7.5
Infectious disease	62	53.9	11	61.1	73	54.8
Cardiovascular disease	11	9.5	2	11.1	13	9.8
Gastro-intestinal disease	5	4.3	1	5.5	6	4.5
Respiratory disease	4	3.5	2	11.1	6	4.5
Neurologic disease	3	2.6	0	0.0	3	2.2
Injury/trauma	4	3.5	0	0.0	4	3.0
Other/couldn’t tell	18	15.6	0	0.0	18	13.5
Reason for not seeking care						
Anticipated high cost	20	17.4	6	33.3	26	19.5
Family disapproval	4	3.5	0	0.0	4	3.0
Chronic illness/palliation	1	0.9	0	0.0	1	0.7
Self-medication	87	75.6	8	44.4	95	71.3
Negligence	3	2.6	1	5.5	4	3.0
Distance to health facil.	0	0.0	2	11.1	2	1.5
Lack of transportation	0	0.0	2	11.1	2	1.5

on impact of household size on standard of living and health have yielded mixed results.²⁴⁻²⁶ Larger family size has been found, to a certain extent, to negatively affect health outcomes due to resource dilution, but there are arguments that the assumption of a fixed and narrow flow of resources from parents underpinning the theory may not always hold.²⁵ Unemployment rate was high at 49.5% (South Africa-60%).²¹ Of note, employment in the DRC context does not necessarily equate good income because wages are fairly low, particularly among public servants. Our data suggest that the differences in level of education between UA and PUA may have indirectly affected these groups' utilisation of healthcare. There is evidence that education is a determinant of health, correlating with healthy lifestyles, health seeking behaviours, preventative service use.²⁷ Income interacts in many ways with education and appears to have an equal effect on health²⁷; they both impact the standard of living, the dwelling type, access to amenities such as running water and electricity (restricted in PUA vs UA), health behaviours and practices.²⁸⁻²⁹ The level of poverty we recorded is worse than the sub-Saharan average of 40% of the population living below the US\$1.90/day poverty line.³⁰ The higher poverty level in PUA is multifactorial, with lower employment rate likely playing a role. In the context of a fee-for-service health system, the lack of financial resources undoubtedly had an impact on utilisation of healthcare services. Our data show that access to healthcare is largely unaffordable for the majority in Kinshasa. Acute sickness and injury represent a serious threat to the already precarious financial situation of most households.³¹⁻³²

Routine primary healthcare visits for antenatal and postnatal care, childhood checks, chronic illness follow-ups and routine screening among others were relatively low (23.1%), similar to findings in South Africa (24.1%).²¹ This could be due to the scarcity of clinics and hospitals to cater for a dense population with a fairly high burden of disease, the inadequate supply of various routine health services and the financial drain of cash payment for services on the limited household budgets. The attendance rate was significantly lower in PUA compared with UA, in keeping with the established evidence of reduced access to care in rural compared with urban populations.³³⁻³⁵ The rate of unscheduled visits for acute illnesses or injuries (52.6%) was significantly higher than routine visits, and higher than in the Cameroon and South African studies (34.8% and 17%, respectively).²⁰⁻²¹ This may suggest that health services are mostly sought when acuity and severity drive behaviour, and the lack of access to primary healthcare delays presentations until they become emergencies. Residents of UA attended mostly private facilities and those in PUA generally visited public ones, likely due to cost or scarcity of private facilities in rural regions. Though expensive, private healthcare is often preferred and perceived as offering better services. However, a large Cochrane review found private healthcare services in LMIC to be no better and sometimes inferior.³⁶ Utilisation of ambulance services for emergency

care was almost non-existent (0.2%), well below other African countries like South Africa (67%),²¹ Ethiopia (20.3%)³⁷ and Ghana (4.5%).³⁸ Though our study did not investigate average distances between households and their nearest health facilities, there is little doubt that the lack of ambulance services is a major barrier to emergency care in Kinshasa as is the case in many LMICs.³⁹ In the context of economically disadvantaged households, the relatively low cost of transportation to health facilities reported (<US\$2 for 77% of respondents) still represents a non-negligible deterrent to seeking emergency care.

Our study mortality data point to patterns and gaps in the healthcare system as contributors to avoidable deaths. There was a higher mortality rate than official national statistics (155 deaths in a total population of 6560, 23.6 per 1000 people), although it is unclear if this could be due to inaccurate official statistics, information bias or the study period (COVID-19 pandemic). The deceased were relatively young (mean of 45.5 years), well below the country's and sub-Saharan region life expectancy (60.6 and 61.6 years, respectively).¹²⁻⁴⁰ Low socioeconomic status has consistently been associated with increased risk of premature death,⁴¹ and avoidable mortality linked to the inefficiency of healthcare,⁴² particularly lack of adequate emergency care.⁵ These premature deaths (younger age in PUA than UA) may have been prevented by early access to suitable emergency care. One out of five deaths did not receive any care in the 24 hours prior to death.

Unmet emergency care needs were high and similar in UA and PUA (44.0% vs 43.0%). Unlike in Cameroon where neurological conditions formed the main group for unmet needs,²⁰ infectious diseases represented the majority of conditions in our study, in keeping with the country's burden of disease. Self-medication and the anticipated high cost of healthcare were by far the two most cited reasons; in contrast, economic issues and use of complementary medicine were the two main motives in Cameroon.²⁰ Acceptability, accessibility and cost have been shown to be important factors elsewhere.⁴³ In fact, the two top reasons in our study (self-medication and the anticipated high cost of healthcare) come down to unaffordability of care. Self-medication in place of seeking professional medical care is a widespread practice in LICs⁴⁴ and has a multifactorial basis. Poor socioeconomic status, lower level of education, inaccessible and unaffordable healthcare have all been cited.⁴⁵⁻⁴⁶

CONCLUSION

This population-based evaluation provides an understanding of the nature and level of the demand and supply of emergency care in Kinshasa. The results point to critical barriers to access mainly due to poverty in the context of under-resourced fee-for-service healthcare system. The reasons for unmet emergency care needs and the factors related to the high rate of avoidable premature deaths underpin the necessity to develop emergency

care in Kinshasa, DRC. Substantial contextually relevant interventions aimed at improving access, increasing availability of services, building capacity and reducing cost of emergency care are needed to address the identified gaps.

A full version of the article in French is provided as online supplemental file 2.

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