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Research Article

Analysis of the Factors Limiting Access to Health Services in the Kalehe Health Zone in the Democratic Republic of Congo

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Abstract

Introduction: Accessibility to healthcare services is a multidimensional concept that encompasses geographical, financial, organizational, and sociocultural acceptability. In the Kalehe Health Zone in the DRC, accessibility faces numerous challenges. The present work aims to identify the main determinants of the low accessibility to health services in the Kalehe Health Zone.

Methodology: The study is of a cross-sectional analytical type, conducted from May to September 2024. It used mixed data through a survey of a sample of 310 people. The analysis of the quantitative data consisted of a univariate analysis, utilizing descriptive statistics with the SPSS (IBM) version 28 software. Qualitative data underwent thematic analysis.

Results: In the Kalehe Health Zone, several factors are identified as barriers to accessing healthcare, among which the main ones are distance, the remoteness of healthcare facilities (cited by 37% of individuals), as well as the high cost of care (cited by 27% of individuals).

Discussion: The results showed that the population of this health zone faces challenges related to distance and transportation difficulties to access health facilities, which often delays care and increases health risks.

Conclusion: It is essential to develop integrated strategies to improve access to healthcare in the Kalehe health zone. This could include, for example, strengthening health infrastructures, implementing health coverage programs, or organizing transportation for the most vulnerable patients, with the involvement of political authorities.

Keywords: Accessibility to Healthcare Services; Barriers; Kalehe Health Zone; DR Congo

Introduction

Accessibility to health services in a Health Zone (HZ) refers to the ease with which the population of a given area can obtain quality healthcare based on various geographical, economic, organizational, and sociocultural factors [1,2]. It is a multidimensional concept, encompassing four main dimensions: geographical accessibility, financial accessibility, organizational accessibility, and sociocultural accessibility, in addition to resource availability. These dimensions influence the ability of populations to use health services and benefit from them [2,3]. First, geographical

accessibility, which includes the ability for residents to reach healthcare facilities based on distance, road infrastructure, and means of transportation. Then financial accessibility, translated by the patients' ability to pay for medical services (medical care, including consultations, medications, and interventions), with or without assistance (health mutuals, health insurance systems, free or subsidized care for vulnerable populations). Then, organizational accessibility related to the availability of services (opening hours, waiting times, medical staff, quality of equipment and medications, efficiency of the referral and counter-referral system), medical personnel, and necessary equipment. Finally, sociocultural acceptability marked by the alignment of services with the beliefs, values, and expectations of the populations (perception and trust of the populations towards health services, consideration of cultural and religious beliefs, quality of reception, and respect for patients' rights) [2].

Access to healthcare varies significantly between countries. In developed countries, healthcare systems are well-developed with universal or partial coverage, although inequalities persist (medical deserts, cost of care for the uninsured, waiting times). In emerging countries, access to healthcare is improving but remains unequal between urban and rural areas. The infrastructure is developing, but the quality of services remains a challenge. In developing countries, access to healthcare is limited by the lack of infrastructure, medical personnel, funding, and political stability. Basic healthcare is often not guaranteed [4].

The empirical analysis of data from the 2022 annual report of the Kalehe Health Zone [5], located in the South Kivu province of the Democratic Republic of the Congo (DRC), demonstrates that this health zone faces numerous challenges in accessing healthcare services related to several factors. These factors, often described as associated with social health inequalities, are found in the Kalehe Health Zone. These include (i) insufficient healthcare infrastructure (few hospitals and health centers are available, and those that exist are often poorly equipped), (ii) poor road conditions and isolation (the mountainous terrain and lack of passable roads complicate access to healthcare facilities, especially during the rainy season), (iii) lack of qualified personnel (the shortage of qualified doctors and nurses limits the quality of care), (iv) poverty and the cost of care (the majority of the population lives below the poverty line and struggles to afford care due to inadequate health coverage), (v) insecurity and conflicts (armed groups active in the region disrupt the proper functioning of health services, particularly by attacking medical facilities and forcing populations to move), and (vi) epidemics and endemic diseases (malaria, cholera, and other infectious diseases are common, and care remains limited).

Although access to healthcare varies considerably from one country to another, it remains a crucial issue for ensuring the well-being of populations, especially in areas like Kalehe where the challenges are particularly pronounced. A report from the South Kivu Health Mutual showed that since the last quarter of 2022, the Kalehe territory has welcomed several waves of displaced persons from the Masisi territory in North Kivu due to the M23 criminal crisis [7]. Several other waves of displacement have been recorded in this health zone, bringing the number of displaced persons from the same crisis to over 100,000. According to this report, the majority of the displaced are being hosted by foster families. While nearly 50% of these displaced individuals are inaccessible, the others are accessible. Several deaths have been recorded in this area due to the population's lack of access to healthcare facilities. The economic situation and many other factors prevent 60% of this population from accessing quality healthcare [8].

In this rural health zone in a crisis situation, we focused on identifying the main factors that need to be addressed to improve accessibility to health services, taking into account economic, infrastructural, and security constraints. This work aimed to identify the main determinants of the low accessibility of the population in the Kalehe Health Zone to health services.

Methodology

Description of the study area

The study takes place in the Kalehe Health Zone, located in the northern part of the South Kivu province. The healthcare organization in Kalehe began during the colonial era under the name of the Kalehe rural dispensary and was entirely dependent on the Katana area. In 1980, the name changed and it became a peripheral health center of the Medical Foundation of the University of Louvain in Central Africa (FOMULAC) [9] which provided its funding. In 1985, it became a reference health center with the construction of a maternity ward within it, then the Kalehe Hospital Center in 1998, under the management of the Diocesan Office of Medical Works of Bukavu. The division of health zones

that took place in October 2004 will give rise to the Kalehe Health Zone, whose population is estimated to be 185,286 inhabitants in 2024 [8].

Type and study period

The study conducted is of a cross-sectional analytical type, carried out from May to September 2024.

Population under study

The study targeted a sample drawn from the population of the Kalehe health zone. Table 1 presents the entire population of Kalehe by health area (HA) as well as the selected HAs and the number of households chosen for the study.

N°	Health Areas	Population	Households	Sample
1	Bujuki	8264	1181	25
2	Bushaku	10587	1512	32
3	Bushushu	6790	970	20
4	Cigera	11604	1658	
5	Ishovu	8911	1273	27
6	Kalehe	21538	3077	
7	Kasheke	12847	1835	
8	Lemera	15995	2285	48
9	Lushebere	10447	1492	31
10	Luzira	8229	1176	24
11	Muhongoza	14479	2068	43
12	Mushenyi	7922	1132	
13	Mweha	6921	989	21
14	Nyabibwe	23014	3288	
15	Nyamukubi	4521	646	
16	Tchofi	13217	1888	39
Total		185286	26470	310
Legend		Health areas selected for the study		

Table 1: Health Zone population and sample distribution by Health Area.

Choice and sample size

The selection of AS was based on geographical accessibility to health services. We have thus selected 10 AS where access to healthcare services is a major issue. These are Bujuki, Bushaku, Bushushu, Ishovu, Lemera, Lushebere, Luzira, Muhongoza, Mweha, and Tchofi. In order to determine the sample size for the survey, the LUNCH formula was applied to the total number of households in the 10 AS (i.e., 26,470 households), constituting a total population of 103,840 inhabitants.

According to this formula, Where;

n: sample size

P: Prevalence of the problem, which is low accessibility to healthcare services, is 28.2.

% (according to the central office of the Health Zone)

N: Total population of the selected Health Areas d: Corresponds to the margin of error which is 5%

Z: Coefficient corresponding to the 95% confidence level)

$$n = \frac{NZ\alpha^2.p.(1-p)}{Nd^2+Z\alpha^2.p(1-p)} = \frac{103840.(1,96)^2.0,282(1-0,282)}{103840.(0,05)^2+(1,96)^2.0,282(1-0,282)}$$

$$= \frac{103840.(3,8416).0,282(0,718)}{103840.(0,0025)+(3,8416).0,282(0,718)} = \frac{398911,744.0,202476}{259,6+3,8416.0,202476}$$

$$= \frac{80770,05427814}{260,3778318016} = 310,2 \text{ either } 310 \text{ Persons for the investigation.}$$

Hence, the sample consisted of 310 people in the 10 AS.

The sampling technique used was Proportional Stratified Random Sampling (PSRS), distributed proportionally across the 10 Health Zones.

Coefficient= n/N= 0.002555689

To be included in the study, one had to be a resident of the Kalehe health zone and freely agree to answer the questions.

Data collection

Data collection involved a field survey using a questionnaire with closed-ended questions. The information was recorded using the Kobocollect application. The collected data were mixed, covering socio-economic, demographic, cultural, and organizational variables distinguished as dependent and explanatory variables for access to health services. The study variables are defined in the following Table 2.

Variable	Operational Definition
Quantitative Variables	
Household Size	Number of people living in the household.
Age	The number of years the respondent has lived since birth.
Average Monthly Household Income	The average monthly income of the household.
Dependents	Number of people under the respondent's responsibility.
Waiting Time	Number of hours or minutes the respondent waits at the health facility to be consulted.
Number of Health Services in the Area	Number of health structures (such as Health Center, Medical Center, General Referral Hospital, or Health Post).
Qualitative Variables	
Perfect Accessibility to Health Services	The ability to access healthcare services without any difficulty.
Waiting Time Upon Arrival at the Facility	Time perceived by service users as Acceptable (waiting time <30 minutes) or Unacceptable (waiting time ≥30 minutes).
Means of Transport	Mode of transportation used to reach healthcare services in the Kalehe Health Zone (on foot, motorcycle, bicycle, canoe, or automobile).
Reception	Patient's assessment of the reception (Good: if the patient is welcomed in a friendly atmosphere and well cared for by staff; Bad: if the patient is neglected upon arrival at healthcare services).
Buildings	Buildings should be Sufficient (when patients are accommodated without overcrowding, with well-ventilated and fully equipped rooms) or Insufficient (when patients are in overcrowded and poorly ventilated buildings).
Barriers to Accessibility of Services	Any obstacle that may hinder the population's access to healthcare services. This can be geographical, cultural, political, health-related, etc.

Table 2: Operational Definition of Variables Under Study.

Data analysis

The collected data was entered into the Excel file by one of the researchers.

The quantitative data were then exported to SPSS (IBM) version 28 software for a univariate analysis that allowed the calculation of descriptive statistics for the different variables under study (frequency, mean, and standard deviation). A 95% confidence interval was calculated.

The qualitative data underwent thematic analysis regarding the level of accessibility to health services, waiting time, means of transportation, reception, condition of the healthcare facilities' buildings, and barriers to accessibility to health services.

Ethical considerations

The research protocol was approved by the university's research committee. We then obtained authorization from the health authorities of the Kalehe Health Zone to conduct the study there. Informed consent was obtained from each study participant, and anonymity was guaranteed throughout the data processing to ensure the confidentiality of the collected information and respect for the dignity of each participant.

Results

Characteristics of the participant

In terms of socio-demographics, the majority of respondents were 30 years old or younger (52.9%), female (51.6%), married or single (83.2%), and able to read and write (91.3%). On the socio-

Variables	Frequency (n = 310)	%
Socio-Demographic Characteristics		
Age		
18-30 years	164	52.9
31-50 years	106	34.2
51 years and above	40	12.9
Gender		
Male	150	48.4
Female	160	51.6
Marital Status		
Married	147	47.4
Single	111	35.8
Widowed	30	9.7
Divorced	4	1.3
Separated	18	5.8
Education Level		
No formal education	27	8.7
Primary level	125	40.3
Secondary level	97	31.3
University level	61	19.7
Socio-Economic Characteristics		
Occupation		
Unemployed	145	46.8
Salaried	133	42.9
Student	32	10.3
Means of Transport		
On foot	296	95.5
Bicycle	1	0.3
Motorcycle	13	4.2
Cost of Healthcare Services		
High cost	139	44.8
Moderately acceptable	138	44.5
Affordable cost	33	10.6
Household Monthly Income		
Less than 50 USD	109	35.2
50 USD to 100 USD	92	29.7
100 USD and above	30	9.7
Does not know	79	25.5
Accessibility to Healthcare Based on Income		
Accessible	80	25.8
Not accessible	230	74.2
Socio-Cultural Characteristics		
Negative Influence of Certain Practices on Accessibility		
In no case	151	48.7
Some modern practices	47	15.2
Traditional medicine	112	36.1
Influence of Religion on Accessibility		
Positive	282	91.0
Negative	28	9.0

Table 3: Distribution Based on Participant Characteristics.

economic level, only 42.9% are salaried, 95.5% of people walk to health services, 10.6% of people find the cost of care acceptable, only 9.7% of people earn 100 US dollars or more, and the vast majority of people (74.2%) cannot access health services due to their income. At the socio-cultural level, traditional medicine is preferred in 36.1% of cases, and religion positively influences access to care for 91% of people through awareness of good practices organized by churches.

Characteristics of care structures and geography

Variables	Frequency (n = 310)	%
Healthcare Facility Characteristics		
Reception Satisfaction in the Facility		
Good	226	72.9
Not good	84	27.1
Building Condition Satisfaction		
Sufficient	175	56.5
Less sufficient	135	43.5
Availability of Staff		
Yes	230	74.2
No	80	25.8

Geographical Characteristics		
Access Barrier (River)		
Exists	104	33.5
Does not exist	206	66.5
Distance Traveled		
Less than 3 km	145	46.8
3 to 5 km	158	50.9
5 km or more	7	2.3

Table 4: Distribution Based on Organizational and Geographical Characteristics.

Regarding the organization of health services, 72.9% of people believe that the reception is good, 43.6% think that the buildings are insufficient, and the vast majority (74.2%) find staff available when they arrive at the care services. The results show that a natural obstacle (river) to geographical access to health services exists for 33.5% of people and that only 46.8% travel less than 3 km to reach health services.

Breakdown by time to reach nearest care facility

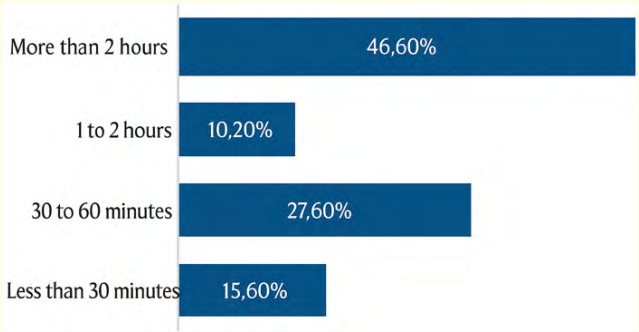

Figure 1: Time to reach the nearest health center.

The vast majority (46.6%) of residents take one to two hours on the road to reach healthcare facilities, while only 15.6% take less than thirty minutes, a duration considered satisfactory.

Identified barriers to accessing healthcare services

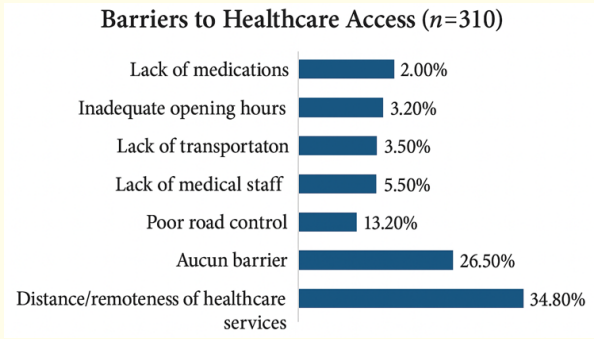

Figure 2: Perceived barrier to accessibility.

The distance/remoteness of healthcare facilities as well as the high cost of care are perceived as the main barriers to accessing health services.

Discussion

This work aimed to identify the main determinants of the low accessibility of the population in the Kalehe Health Zone to health services. The main limitation of this study is the difficulty in collecting complete and reliable data on access to care by the population at the healthcare facilities in the Kalehe Health Zone, particularly due to the lack of systematic monitoring of this type of data in the health zone. We discuss in the following paragraphs the main factors of low geographical, financial, organizational accessibility, and sociocultural acceptability, according to our initial framework [2].

Geographical accessibility

The results show that a natural barrier (river) to geographical access to health services exists for 33.5% of people, that 95.5% of people walk to reach health services, that the vast majority (46.6%) of residents take one to two hours to reach health facilities, and that only 46.8% travel less than 3 km to access health services in the Kalehe Health Zone. Other studies have shown that, in addition to the various constraints that limit the effective delivery of health services, distance constitutes a major problem of accessibility to health services for the many people living in remote rural communities in developing countries [13]. This situation is exacerbated by the lack of roads and ultimately the absence of reliable transportation for this population, 95.5% of whom walk to access healthcare services. The few existing roads are not

maintained; thus, the population has difficulty reaching the nearest hospital or health center, especially during the rainy season. The mountainous terrain, often subject to difficult geographical conditions, was not mentioned as an obstacle to accessing health services. The establishment of adapted transportation, particularly for people with disabilities, the elderly, and pregnant women, as well as the implementation of local health structures close to the population, could improve the geographical accessibility of the population to health services. Security issues related to armed conflicts, although not identified in the present study, can make access to healthcare even more difficult in the Kalehe Health Zone. The roads may be closed, healthcare services may be partially or totally inaccessible, and patients may be afraid to go to certain areas due to insecurity [14].

Financial accessibility

The study results show that only 42.9% are salaried, 10.6% of people believe that the cost of care is acceptable, only 9.7% of people earn 100 US dollars or more, and the vast majority of people (74.2%) cannot access health services due to their income. The population of Kalehe faces consultation fees to see a doctor or another healthcare professional, the costs of medications and treatments that are sometimes prohibitive for certain categories of people, and hospitalization and surgery fees. These costs, along with those for laboratory tests or urgent surgical interventions, can make access difficult for people without financial coverage [15,16]. The absence of health insurance coverage, as well as the insufficiency of public funding for health, exacerbates this financial accessibility in Kalehe. Without insurance, patients must pay out of pocket, which is an insurmountable burden for families, mostly with low incomes. In certain situations, mismanagement of funds allocated to healthcare can lead to shortages of medications, personnel, or infrastructure [18-20], forcing patients to turn to more expensive options, often in the private sector, and worsening their financial accessibility to care [21]. Also, when patients frequently have to travel to distant healthcare facilities, or if they are hospitalized for prolonged treatments, the loss of income due to absence from work can make access to care even more difficult. Some non-governmental organizations (NGOs) can offer grants, fee reduction programs, or free care for the most vulnerable populations [24]. However, these programs are not always well-known, or are underfunded, which limits their effectiveness. In Kalehe, support programs are not always evenly distributed, and some communities may have limited access to these aids, which reinforces disparities in access to healthcare within health zones [25].

Organizational accessibility

The results reveal that 72.9% of people believe the reception is good, 43.6% think the buildings are insufficient, and the vast majority (74.2%) find staff available when they arrive at the care services. In Kalehe, each health area has at least one health facility. However, some facilities lack capacity (number of beds, equipment, staff), which limits the effectiveness of patient reception and care. Access to specialized care is also limited in the Kalehe Health Zone, and as a result, some complex medical conditions are not treated there and are thus referred, despite the financial care challenge faced by the majority of patients in this Health Zone. The aspect of the quality of human resources and their availability was not analyzed in the present study. However, it should be noted that the lack of stability in healthcare teams, often linked to low remuneration or difficult working conditions, can disrupt the continuity of care, affecting the organization of health services and the relationship between patients and caregivers [26,27]. The operating hours of health centers in Kalehe promote access for the population because they are flexible, with continuous accessibility. Emergency services are also organized in a way to quickly respond to patients' needs. The analysis of waiting times, however, was not conducted because emergency services with excessively long waiting times can limit organizational accessibility [28,29]. The Kalehe Health Zone is composed of several levels of health services (health posts, health centers, hospitals), and coordination between these levels is essential to ensure continuous and appropriate care. Poor coordination can lead to delays in care, management errors, or patients falling through the cracks of the system.

Sociocultural acceptability

The results of this study show that traditional medicine is preferred in 36.1% of cases, and religion positively influences access to care for 91% of people through awareness of good practices organized by churches.

In many regions, populations may have a strong preference for traditional remedies and local healers. Traditional medicine may

be perceived as more accessible, more culturally appropriate, and more in tune with local beliefs [30,31]. Modern healthcare services often have to face cultural competition from traditional practices. Also, local conceptions of illness, its cause, and its treatment can be very different from those of healthcare professionals. For example, some communities may explain certain illnesses by spiritual or supernatural causes, which could make it difficult to accept Western or modern medical treatments [32]. Another factor concerns certain cultural practices that may conflict with medical care (for example, taboos regarding certain types of treatments or interventions, such as prenatal care, blood transfusions, or surgical procedures). This situation has not been explored in the present study, nor has the population's trust in the healthcare system, the role of social networks, family, or the social stigma associated with certain health conditions such as HIV. These factors can prevent individuals from accessing healthcare services. In Kalehe, the study demonstrates the influence of religious beliefs on attitudes towards certain types of care or treatments.

Conclusion

The study on the accessibility of health services in the Kalehe Health Zone has shed light on the various factors influencing access to care for the local population. These factors are geographical, financial, organizational, sociocultural, and political in nature, and reveal the challenges and opportunities related to improving access to healthcare services in this region. The results showed that the population of this health zone faces challenges related to distance and transportation difficulties in accessing health facilities, which often delays care and increases health risks. Financial accessibility has also been a determining factor. The costs of care, including consultation fees, hospitalization, and the purchase of medications, are considered high by a significant portion of the population, especially in a context of poverty. The lack of sufficient insurance coverage and the direct costs of care make access difficult for many families, particularly those with low incomes. The organization of health services in the Kalehe Health Zone has been identified as another key factor influencing accessibility. The management of healthcare facilities, the quality of services, the availability of human and material resources, as well as the coordination between different levels of care, play an important role in the effectiveness of the healthcare system. Shortages of qualified personnel and insufficient infrastructure are major obstacles to improving access to care. The sociocultural dimension has shown that local cultural practices and beliefs strongly influence the acceptability of health services. Traditional medicine remains largely favored by a portion of the population due to its accessibility, low cost, and compatibility with cultural values. The acceptability of modern healthcare is therefore conditioned by the healthcare system's ability to integrate these cultural elements while promoting the benefits of modern medicine.

It is essential to develop integrated strategies to improve access to care in the Kalehe Health Zone. This could include strengthening health infrastructure, implementing health coverage programs, enhancing human resources with continuous training for medical staff and better distribution of healthcare professionals in the health zone, raising awareness and engaging in dialogue with communities to increase the acceptability of modern health services while respecting local cultural traditions, and improving the coordination and management of health services for better overall patient care.

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