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Characteristics of Health Services Providing Care for Children in Disadvantaged Neighborhoods in the City of Lubumbashi

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Abstract

Introduction: Access to healthcare services remains a major challenge in developing countries, particularly in disadvantaged neighborhoods where social inequalities translate into disparities in the use of healthcare services. In Lubumbashi, numerous barriers limit children in disadvantaged neighborhoods' access to healthcare: precarious socioeconomic conditions, lack of or distance from healthcare services, and geographical disparities, leading to the use of informal alternatives (traditional medicine, self-medication). This study aimed to identify healthcare facilities in disadvantaged neighborhoods of Lubumbashi that are accessible to parents of children. **Methods:** A descriptive cross-sectional study was conducted in healthcare facilities in disadvantaged neighborhoods of Lubumbashi. The sample of 145 healthcare facilities was selected using a three-stage probability sampling method: health zones within disadvantaged neighborhoods, health areas, and individual healthcare facilities. Data collection was carried out using a structured questionnaire administered via Kobo Collect v2025.3.3 software to healthcare professionals (physicians and nurses) and administrators of the healthcare facilities, followed by a personal observation grid. **Results:** It has been revealed that 92.41% of healthcare facilities in disadvantaged neighborhoods of Lubumbashi are private, and 15.86% to 20% have no operating license. These facilities have limited technical resources and lack diagnostic equipment (46.32% lack microscopes), with poor

coverage of child health services and a shortage of qualified personnel (32.41% lack vaccination services, and 93.31% lack pediatric specialists). Healthcare costs are 93.79% covered by households, 95.17% of facilities use a fee-for-service model, and 62.76% lack quality infrastructure. **Conclusion:** The health facilities in disadvantaged neighborhoods of Lubumbashi are mostly private and face numerous challenges, including inadequate equipment, a shortage of qualified staff, and insufficient infrastructure. These findings underscore the need to implement actions and a conceptual model aimed at improving access to quality healthcare for children in these neighborhoods.

Subject Areas

Health Policy

Keywords

Access to Healthcare, Treatment Pathway, Healthcare Services, Disadvantaged Neighborhoods, Children

1. Introduction

Disadvantaged neighborhoods are those teeming with poor populations where children rarely attend school due to lack of resources, and parents have barely enough income to survive because they are unemployed. To make ends meet, women engage in activities such as street vending, commonly known as pirate markets, and small-scale vegetable gardening. These neighborhoods have virtually no access to water or electricity.

Access to healthcare is a major challenge in developing countries, especially in disadvantaged neighborhoods where social inequalities translate into marked disparities in the use of health services [1].

Child health, considered a key indicator of human development, depends not only on the availability of healthcare facilities, but also on families' ability to access them and follow a coherent treatment plan. However, in disadvantaged neighborhoods, parents are often forced to choose between several options: overcrowded public facilities, expensive private clinics, faith-based services, recourse to traditional medicine, or self-medication through the informal pharmaceutical market [2] [3].

Access to quality healthcare services and treatment plans for children in disadvantaged neighborhoods are among the important issues for promoting health equity [4]. Numerous studies on the characteristics of health structures in disadvantaged neighborhoods have revealed a deficient supply of care, with 3.2 times fewer general practitioners and few care structures, resulting in underutilization of care due to financial and accessibility factors [5].

These facilities are primarily characterized by a shortage of healthcare services, with a severe lack of general practitioners and specialists in private practice. Geo-

graphic inaccessibility is another problem, due to impassable roads and significant distances from urban centers. In many neighborhoods, healthcare infrastructure is virtually nonexistent or under-equipped, particularly in informal settlements [6].

Access to healthcare in Africa is a concern for authorities. Long viewed primarily through the lens of geographical distance, the failure of health policies aimed at reducing the distance between facilities and the population has highlighted the multiple causes of low utilization of services, including the obstacle of the cost of care and prescribed medications [7].

In the DRC the situation remains worrying: the State's mission to provide health services in terms of quality, accessibility and equity is a paradox because almost all the costs of care and operation of health facilities are borne by the population, which is also mostly poor and whose income is insufficient to meet this challenge [8].

2. Methods

2.1. Study Design

A cross-sectional study was conducted.

2.2. Study Framework

This study was carried out within the healthcare facilities of the health areas of disadvantaged neighborhoods, peri-urban health Health District (HD) of the city of Lubumbashi (Katuba, Kenya, Lubumbashi and Ruashi) in the south of the Democratic Republic of the Congo (DRC).

2.3. Study Population

The study population included health professionals (doctors and nurses) and administrators managing health facilities in disadvantaged areas on the outskirts of Lubumbashi.

Inclusion Criteria

Included in this study were all healthcare professionals (doctors or nurses) and administrative managers working in hospitals, medical centers, health centers, dispensaries and health posts.

Variables

Sampling and Sample Size

A list of 145 establishments eligible for the study was obtained from 24 health areas in disadvantaged neighborhoods from 4 peri-urban health zones of Lubumbashi due to 6 health areas and 6 health establishments (*i.e.* more or less 60% of the total workforce) per health area The following variables were studied:

- Variables relating to respondents, namely: professional category, age, sex, and length of service.
- Variables relating to the facilities, such as the category of the healthcare facility, its affiliation, its viability, types of infrastructure, technical platform, equip-

ment construction materials, operating license, affiliation with the national health system, range of services, staff qualifications, and the method of financing and pricing of care.

The sample of 145 health structures was formed by a three-stage probabilistic survey: health zones in disadvantaged neighborhoods (1st stage), Health areas (2nd stage) and health structures (3rd stage).

The questionnaire and observation grid were developed with simple, clear, and uniform questions, identifying the key variables of the study. A pilot survey was conducted to pretest the questionnaire in several health facilities within the Masangoshi Health Area, one of the health areas serving disadvantaged neighborhoods in the Ruashi area, in order to verify its clarity and adjust as needed.

2.4. Ethical Considerations

This study was authorized by the ethics committee of the School of Public Health at the University of Lubumbashi. Authorization was also obtained from local administrative authorities, health zones, and health facilities. Furthermore, informed consent was obtained from the healthcare professionals participating in the survey, while strictly guaranteeing the confidentiality and anonymity of the participants.

3. Results

Table 1 shows that 40.69% of respondents were between 30 and 39 years old, with a mean age of 36 ± 9.88 years (standard deviation), a minimum age of 20 years, and a maximum age of 69 years. 62.07% of respondents were male. The male-to-female ratio was 90/55 = 1.63. 86.21% of respondents were nurses. 47.59% of respondents had between 0 and 4 years of service.

Table 1. Socio-professional categories of participants.

Socio-professional categories	Frequency (145)	Percentage %
Age		
20 - 29	41	28.28
30 - 39	59	40.69
40 - 49	31	21.38
50 - 59	9	6.21
60 - 69	5	3.45
Sex		
Female	55	37.93
Male	90	62.07
Professional categories		
Nurses	125	86.21
Medical Doctors (MD)	11	7.59

Continued

Administrator/Manager (A/M)	3	2.07
Midwife	6	4.14
Seniority range (years)		
0 - 4 years	69	47.59
5 - 9 years	48	33.10
10 - 14 years	13	8.97
15 - 19 years	10	6.90
20 years and over	5	3.45

Table 2 reveals that 80.69% of the health facilities were health centers. 92.41% of the health facilities were privately owned. 84.14% of the health facilities had authorization to operate. 80.00% of the health facilities were affiliated with the health zone. 47.59% of the health facilities had the capacity to accommodate patients (beds set up). 51.72% of the health facilities had been in operation for between 1 and 5 years.

Table 2. Characteristics of health services providing care in disadvantaged neighborhoods.

Health services providing care in disadvantaged neighborhoods	Frequency (145)	Percentage %
Health Facility Category		
Health Center	117	80.69
Medical Center	14	9.66
Dispensary	3	2.07
General Referral Hospital	1	0.69
Polyclinic	2	1.38
Health Post	8	5.52
Health Facility Affiliation		
Contracted (Church)	5	3.45
Private	134	92.41
Public	6	4.14
Health Facility with Operating Authorization		
Yes	122	84.14
No	23	15.86
Health Facility Affiliated with the Health Zone		
Yes	116	80.00
No	29	20.00
Capacity (beds set up)		
1 - 10	69	47.59

Continued

11 - 20	54	37.24
21 - 30	12	8.28
31 - 40	4	2.76
41 - 50	6	4.14
Number of Years in Operation		
1 - 5	75	51.72
6 - 10	39	26.90
11 - 15	18	12.41
≥16	13	8.97

Table 3 indicates that 95.86% of organized activities were curative care (treatment of common illnesses).

Table 3. Package of activities organized in health facilities of disadvantaged neighborhoods of the city of Lubumbashi.

Activities organized in the health facilities	Frequency (145)	Percentage %
Curative care (treatment of common illnesses)	139	95.86
Small laboratory	95	65.51
Observation	130	89.61
Hospitalization	138	95.17
Management of chronic diseases (TB, HIV, AIDS)	6	4.14
Pharmacy (small in-house pharmacy)	101	69.66
Minor surgery	104	71.72
General surgery (specialized surgical care)	7	4.82
Assisted childbirth and maternity ward	120	82.75
ANC (Anterior antenatal care)	117	80.68
Postnatal consultation	112	77.24
Vaccination	89	67.59
Family planning	81	55.86
Health education	56	36.62
Management of acute malnutrition	25	17.24
Blood transfusion	9	6.21
Medical imaging (ultrasound)	62	42.75
Medical imaging (X-Ray)	34	23.45
Hygiene and sanitation promotion	3	2.07
Curative care (treatment of common illnesses)	28	19.31

Table 4 reveals that 32.41% of health facilities do not offer childhood vaccination services. 90.82% of health facilities had a weekly childhood vaccination schedule. 6.21% of health facilities offer acute malnutrition treatment. 7.59% of health facilities have the guidelines and equipment for providing curative infant care (flowchart). 84.83% of health facilities have priority essential medicines.

Table 4. Organization of vaccination services, management of acute malnutrition, integrated care for childhood illnesses (ICCI) and availability of guidelines and equipment for curative infant care services.

Vaccination Organization	Frequency (145)	Percentage %
Health facility with child vaccination service		
Yes	98	67.59
No	47	32.41
Child vaccination frequency per week in health facilities	n (98)	
1 time	89	90.82
2 times	8	8.16
3 times	1	1.02
Health facility with acute malnutrition treatment service		
Yes	38	6.21
No	107	93.79
Health facility with guidelines and equipment for curative infant care services (flowchart)		
Yes	11	7.59
No	134	92.41
Health facility with priority essential medicines		
Yes	123	84.83
No	22	15.17

Table 5 indicates that 76.55% of doctor consultations cost between $1 and $2. 74.48% of health facilities (FOSA) have a malaria episode costing between $6 and $10. 64.71% of facilities have a blood transfusion costing between $5 and $19. 69.77% of facilities have an appendectomy costing $100. 92.50% of facilities have a normal delivery costing between $15 and $24. 5.83% of facilities offered free delivery. 66.23% of facilities had a gynecological exam costing between $1 and $2. 93.79% of facilities reported that their healthcare financing was based on user fees (household contributions, self-financing). 95.17% of facilities reported that their healthcare pricing was fee-for-service.

Table 5. Cost, financing and pricing of care in health facilities in disadvantaged neighborhoods of the city of Lubumbashi.

Cost of medical care in dollars	Frequency (145)	Percentage %
Doctor's consultation		
1 - 2 USD	111	76.55
3 - 5 USD	31	21.38
6 - 10 USD	3	2.07
Cost of a malaria episode		
6 - 10 USD	19	13.10
11 - 20 USD	108	74.48
21 - 30 USD	12	8.28
31 - 40 USD	6	4.14
Cost of a blood transfusion	n (68)	
5 - 19 USD	44	64.71
20 - 34 USD	14	20.59
35 - 49 USD	4	5.88
Cost of an appendectomy	n (43)	
100 USD	30	69.77
150 USD	6	13.95
200 USD	6	13.95
250 USD	1	2.33
Cost of a normal delivery	n (120)	
15 - 24 USD	111	92.50
25 - 34 USD	7	5.83
35 - 44 USD	2	1.67
Cost of a cesarean section	n (40)	
150 - 200 USD	10	25.00
250 - 300 USD	19	47.50
350 - 400 USD	11	27.50
Free childbirth	n (120)	
Yes	7	5.83
No	113	94.17
Cost of a thick blood smear test	n (77)	
1 - 2 USD	51	66.23
3 - 5 USD	26	33.77
Financing methods for care	n (145)	
Usage-based financing (households, self-financing)	136	93.79
Government subsidy	2	1.38

Continued

Partner (NGO)	7	4.83
Pricing methods for care		
Fee-for-service	138	95.17
Pre-service payment	3	2.07
Episode payment	3	2.07
Subscription payment	1	0.69

Table 6 reveals that 86.20% of healthcare professionals were registered nurses. 38.46% of healthcare professionals were surgical specialists.

Table 6. Qualifications of healthcare professionals providing healthcare in health facilities in disadvantaged neighborhoods and different specialties of healthcare professionals.

Healthcare professional categories	Frequency (145)	Percentage %
General Practitioner	92	63.44
Specialist Physician	11	7.58
Specialist Nurse	2	1.37
Registered Nurse (Bachelor's + 5 years)	60	41.37
Registered Nurse	125	86.20
Registered Nurse (A2 level)	90	62.06
Registered Nurse (A3 level)	17	11.72
Midwives and Midwives	33	22.75
Laboratory Technicians	34	23.44
Pharmacists	6	4.13
General Practitioner	12	8.27
Types of Professional Specialties	n (13)	
Surgery	5	38.46
Public Health	3	23.08
Obstetrics and Gynecology	4	30.77
Pediatrics	1	7.69

Table 7 shows that 83.45% of facilities had 0 to 4 patients per day. 46.21% of facilities had between 30 and 54 patients admitted to the health facility per month.

Table 7. Use of healthcare services by users in disadvantaged neighborhoods of the city of Lubumbashi.

Number of patients admitted to the health facility per day	Frequency (145)	Percentage %
0 - 4 Patients	121	83.45
5 - 9 Patients	19	13.10
10 - 14 Patients	3	2.07
15 - 19 Patients	2	1.38

Continued

Number of patients admitted to the health facility per month		
5 - 29	24	16.55
30 - 54	67	46.21
55 - 79	35	24.14
80 - 104	11	7.59
105 - 129	0	0.00
130 - 154	4	2.76
155 - 179	0	0.00
180 - 204	4	2.76

Table 8 reveals that 88.97% of facilities had rapid diagnostic tests for malaria (RDTs). 23.45% of facilities had ultrasound.

Table 8. Equipment and supplies used in healthcare facilities in disadvantaged neighborhoods.

Biological diagnostic equipment	Frequency (145)	Percentage %
Optical microscope	77	53.68
Rapid diagnostic test for malaria (RDT)	129	88.97
Rapid serological test (RST) for HIV/AIDS	106	73.10
Tuberculosis test	6	4.14
Blood typing test	109	75.17
Hemoglobin test	110	75.86
Widal test	119	82.07
Medical imaging equipment		
Radiology	3	2.07
Ultrasound	34	23.45

Table 9 indicates that 62.76% of the structures were built with semi-durable or non-durable materials. 62.76% of the structures had damaged walls. 54.48% of the structures had damaged doors. 88.97% of the structures had cement floors. 63.19% of the structures had no ceilings. 66.90% of the structures' garbage consisted of baskets, cardboard boxes, and other containers. 40.69% of the structures used solar panels for energy. 33.10% of the structures had well water.

Table 9. Quality of infrastructure and construction materials of healthcare facilities in disadvantaged neighborhoods.

Infrastructure/building materials	Frequency (145)	Percentage %
Durable materials	54	37.24
Semi-durable or non-durable	91	62.76

Continued

Damaged walls		
Yes	91	62.76
No	54	37.24
Damaged doors		
Yes	79	54.48
No	66	45.52
Ground condition		
Cement paved ground	129	88.97
Non-cement paved ground	16	11.03
Ceiling condition		
No ceilings	91	63.19
Damaged ceilings with damp stains	43	29.86
Intact ceilings	10	6.94
Waste management system: containers (bins) for collection		
Container bins with lids	38	26.21
Baskets. cardboard boxes and other containers	97	66.90
Energy sources		
Electricity from electricity supply company (SNEL)	56	38.62
Solar panel	59	40.69
Generator	6	4.14
Natural light from candles and battery-powered lamps	24	16.55
Water supply sources in the buildings		
None	50	34.48
Borrow	48	33.10
Unimproved water well	11	7.59
Water supply company (REGIDESO)	36	24.83

Table 10 reveals that 11.72% of the facilities had a telephone. 99.31% of the facilities did not have ambulance transport for patients. 88.97% of the health facilities were located between 0 and 1 km from a neighboring health facility.

Table 10. Availability of communication and transport resources in health facilities in disadvantaged neighborhoods of the city of Lubumbashi.

Availability of communication resources	Frequency (145)	Percentage %
Phone	17	11.72
Computer	7	4.83

Continued

Internet	3	2.07
Availability of ambulance transport		
Yes	1	0.69
No	144	99.31
Distance between two healthcare facilities (km)		
0 - 1	129	88.97
2 - 3	8	5.52
4 - 5	6	4.14
6 - 7	2	1.38

4. Discussion

This study on the characteristics of healthcare facilities providing care in disadvantaged neighborhoods of Lubumbashi showed that nurses were the most common healthcare professional category among participants (86.21%). The 30 - 39 age group represented 40.69%, with a mean age of 36 ± 9.88 standard deviations. The majority (62%) of participants were male and had between 0 and 4 years of employment (Table 1).

The results of this study also showed that 86.20% of healthcare professionals providing care in disadvantaged neighborhoods were registered nurses, 63.44% of facilities had a general practitioner, with a small percentage of specialists (7.8%), midwives (22.75%), laboratory technicians (23.4%), and 4.13% pharmacists (Table 2, Table 3). These results are consistent with the work of Iona Lofebre and Emma Ros conducted in France on health inequalities in poor French neighborhoods, which showed that these neighborhoods were characterized by significant health disparities [9].

These inequalities are initially observed at the socio-professional level. For example, the number of specialist physicians was 3.4 times lower in poor neighborhoods than in the rest of France [5].

Pediatricians and child psychiatrists were scarce. This situation was also observed in the health facilities of disadvantaged neighborhoods in Lubumbashi, with a very low rate of pediatric specialists (7.69%). Furthermore, other studies on the characteristics of health facilities in disadvantaged neighborhoods revealed a deficient healthcare system, with 3.2 times fewer general practitioners and a significant shortage of independent specialist physicians [8] [10].

Similar results were observed in another study conducted by Jacques M. Bitongwa and colleagues on the state of state and private health structures in post-conflict resilience in the Bunyakiri and Kalehe health zones in South Kivu province. This study revealed governance in health structures in disadvantaged neighborhoods with a proliferation of private facilities and a very low number of doctors, representing 0.04 doctors per 1000 inhabitants, or 24 doctors for a population of

508,879. This contrasts sharply with the professional health categories of nurses (A2, 27.78%, and A1, 27.38%), with male health professionals (68.78%) compared to women (31.32%) [11].

The results of this study also revealed that health centers were the most prevalent healthcare facilities in disadvantaged neighborhoods of Lubumbashi (80.69%), compared to 0.69% for general referral hospitals and 1.39% for polyclinics (**Table 2**). These facilities, the majority of which were private (92.41%), were under-equipped and sometimes lacked any operating permits (15.86%), compared to 20% of facilities integrated into the national health system.

These results were also reported in a study conducted by Jacques M. Bitongwa, Raphaël B. Elias, and colleagues on the state of public and private healthcare facilities in the Bunyakiri and Kalehe health zones of South Kivu province. This study demonstrated poor governance in healthcare facilities in disadvantaged neighborhoods, with a proliferation of private facilities [10] [11].

Other studies on health structures in disadvantaged neighborhoods highlight the predominance of community health centers, dispensaries, etc., to compensate for the distance from hospitals and high costs (**Table 2**). The results obtained from the census of all health structures in the urban area and their geolocation, by Samuel Konan and Raphaël Oura Kouadio during their study on the logic of the establishment of health structures and access to healthcare in Bouaké (Côte d'Ivoire) in 2022, revealed that the different logics of the establishment of health structures are at the origin of socio-specific inequalities in access to healthcare in Bouaké [12].

The more dominant private sector is more concerned with profitability than with supporting the public sector. The faith-based private sector is characterized by its commitment to serving disadvantaged households. The public sector, driven by a desire to adhere to the existing healthcare map, offers limited technical facilities and capacity. These differing location strategies result in a concentration of healthcare facilities in city centers and along major transportation routes [12].

Healthcare facilities become scarce as one moves towards the periphery and hard-to-reach areas. This distribution of healthcare provision by sector reveals potential inequalities in meeting the population's healthcare needs [12].

The results of this study also revealed a low presence of diagnostic equipment in healthcare facilities in disadvantaged neighborhoods of Lubumbashi. Nearly half (46% to 32%) of healthcare facilities do not possess an optical microscope, and only 2.07% have an X-ray machine, compared to 23.45% with an ultrasound machine (**Table 8**).

Audibert and Mbaye (2012) [13] note that while access to healthcare is undeniably a social, economic, and political phenomenon above all, and a fundamental human right, across Africa, significant disparities related to inequitable access to care remain a serious concern due to insufficient medical equipment in healthcare facilities (health centers, general referral hospitals, etc.) and inadequate staff training, among other factors. This situation was also reported by Constant Mbella

Mbon (2021) in his study on access to modern healthcare in the isolated rural areas of the Mélong district, which revealed that in these areas, the rate of healthcare equipment remains very low. There is a glaring lack of equipment in some health centers, including the absence of pharmacies, medications, and laboratories for testing [14].

Health facilities in disadvantaged neighborhoods suffer from chronic under-equipment, marked by drug shortages, a lack of basic supplies, and a brain drain of qualified personnel. These shortages limit the capacity to provide essential care, leading to delays in treatment, a decline in the quality of care, and increased risks for vulnerable populations (**Table 8**). Our results also showed weak organization of child health services in health facilities in disadvantaged neighborhoods of Lubumbashi, with 32.41% of health facilities not organizing childhood vaccinations and 93.79% not organizing acute malnutrition care services [15].

Most health facilities (92.41%) do not even have the guidelines and equipment for providing curative child care (flowchart) (**Table 3**, **Table 4**). These results are consistent with those of various WHO and UNICEF reports on the global vaccination situation, which have shown that the organization of child healthcare in disadvantaged neighborhoods suffers from major inequalities in access, characterized by a shortage of primary care professionals and low vaccination coverage. Preventive care activities are insufficient, with a decline in maternal and child health services leading to a high reliance on emergency departments [16].

According to these same WHO and UNICEF reports, despite the extraordinary progress made in the advancement of childhood and adolescent vaccination over the past decade, 24 million children, or 20% of children born each year, do not receive all the recommended vaccines during the first year of life (WHO and UNICEF). These are generally children living in remote and underserved rural areas, or in the most deprived urban neighborhoods [16].

In another audit report on childhood immunization interventions in four provinces of the Democratic Republic of the Congo (Kasai Oriental, Maniema, Mongala, and Tshopo), conducted by Masie Katherine Waller, Claire Mulanga Tshidibi, and Apphia in 2026, it was shown that the Democratic Republic of the Congo is among the countries where the number of zero-dose (EZD) and under-vaccinated children reaches very high proportions. Gender inequalities and health disparities remain significant barriers contributing to low childhood immunization coverage. At the healthcare level, stockouts and inadequate sanitary conditions (lack of vaccine storage facilities and refrigerators) contribute to under-immunization [17].

Furthermore, childhood vaccination in disadvantaged neighborhoods faces low coverage (sometimes < 50%) due to major logistical, financial, and structural obstacles. Other studies have shown that distance from health centers, poor service quality, and household poverty are also key factors in non-vaccination. In the most disadvantaged areas, vaccination coverage is particularly low, sometimes barely reaching 50% for complete vaccination [18].

Our results also showed that 93.79% of the health facilities surveyed in disad-

vantaged neighborhoods of Lubumbashi are user-funded (households, self-financing); 95.17% of these facilities operate on a fee-for-service basis (**Table 5**).

These results are consistent with those found by Tshilumba in his study analyzing the determinants influencing the supply and demand of healthcare in the Kisanga health zone, which demonstrated a direct payment pricing model for healthcare implemented in predominantly privately owned health facilities [8].

These findings were also demonstrated in the studies by Krishna K. Manya and colleagues on factors limiting household use of healthcare services in Lubumbashi, Democratic Republic of the Congo, which revealed that fee-for-service payment and high healthcare costs were the major factors limiting household use of healthcare services in the Ruashi health zone (33.6% and 23.9% of cases, respectively) [5].

In the Democratic Republic of the Congo, accessibility and equity are a paradox, as almost all the costs of healthcare and the operation of health facilities are borne by the population, which is largely poor and has insufficient income. The level of healthcare financing is estimated at 70% of the costs borne by households, despite the Democratic Republic of the Congo's commitment to universal health coverage.

Our results also revealed a low rate of attendance at health facilities in disadvantaged neighborhoods, ranging from 0 to 4 patients per day (83.45%) (**Table 7**). These results align with those found by Patrick Tshaoma Tshimbadi, who showed that the rate of utilization of curative services in the Kisanga health zone was low, at 23%, despite donor support. Self-medication is the most common form of treatment (44.41%) [4]. The results of another study conducted in Senegal on healthcare-seeking behavior in rural areas showed that the population is characterized by a high prevalence of home-based healthcare and a low tendency to consult modern healthcare facilities due to higher costs rather than the perceived inefficiency of the available equipment [8].

Another study conducted in Canada showed that 90% of children in disadvantaged neighborhoods do not use healthcare services due to a lack of financial resources. This study also revealed that more than half (62.76%) of the healthcare facilities in disadvantaged neighborhoods of Lubumbashi are built with non-durable or semi-durable materials, with damaged walls and no ceilings (63.19%), and without adequate systems for managing healthcare waste [10].

66.90% of facilities lack appropriate waste bins and instead use baskets, cardboard boxes, and other containers, posing a high risk of environmental contamination. These results are consistent with other studies that have shown that healthcare facilities in disadvantaged neighborhoods or sensitive urban areas are frequently characterized by advanced disrepair, a lack of basic infrastructure (water, electricity), and inadequate equipment (**Table 9**).

These facilities often suffer from chronic underinvestment, limiting access to quality care and failing to meet WHO standards. A study on urban health, conducted by Belgian cooperation around projects in Kinshasa and Goma, revealed

that disadvantaged neighborhoods are severely lacking in adequate basic infrastructure and quality services. In addition to structural problems with access to water and electricity, this precarious situation is caused by services based on the hierarchical model of the WHO, which are better suited to rural areas [10].

For Samuel Roger Kamba, in his contribution on World Health Day on April 7, 2023, the infrastructure deficit is among the main problems weakening the health system in the Democratic Republic of the Congo. Key problems include health infrastructure and equipment characterized by advanced obsolescence and no longer meeting the standards set by the WHO [19].

However, in the strategies for quality health infrastructure in Africa (2022-2023), the African Development Bank's expert group showed that Africa faces significant funding gaps for health infrastructure. Yet, the importance of quality health services is recognized as a development objective [20].

This study also showed that health facilities in disadvantaged neighborhoods of Lubumbashi are mostly located within 0 to 1 km (88.97%) (**Table 10**). A study conducted in five neighborhoods on the northern outskirts of Ouagadougou, Burkina Faso, demonstrated that the proximity of a public health facility and the quality of services offered explain the frequency with which people use healthcare services [7].

In another study focusing on developing countries, Alissa, E., considers that geographical barriers play a significant role in access to healthcare. An inverse relationship between the distance and travel time to health facilities and the use of health services was demonstrated [21]. Distance and time thus constitute a significant obstacle to accessing healthcare. However, in a study on measures of geographical accessibility to healthcare in the Bougourni health district in Mali, it was found that more than half of the population remains very far from basic healthcare services. The floating catchment area method was used to measure the spatial dimension of access to healthcare services [22].

According to the results of this study, the inequitable spatial distribution of healthcare services constitutes a major public health problem. Understanding spatial disparities in access to healthcare at a detailed scale is essential for the effective implementation of strategic and political health guidelines, as one of the major challenges of health policies is to guarantee equal access to healthcare for the population within their territory.

5. Study Limitations

Several limitations should be highlighted:

First, the study does not clearly distinguish between categories of healthcare professionals in the public and private sectors, the range of services offered, staff qualifications, and the cost of care, nor does it differentiate between pricing structures for services in public and private healthcare facilities. Finally, the specific context of disadvantaged neighborhoods in Lubumbashi limits the generalizability of the results to other cities in the DRC or Africa.

6. Conclusion

Our study, whose overall objective was to identify healthcare services providing care in disadvantaged neighborhoods of Lubumbashi to which parents of children have access, revealed that: the majority (92.41%) of healthcare facilities operating in these neighborhoods are private health centers; 15.86% of them have no operating license, and 20% are not affiliated with the health zone. Furthermore, 32.41% of these facilities do not offer childhood vaccination services. The majority of facilities (93.79%) are self-funded through user payments, while 95.17% use a fee-for-service model; only 7.69% of healthcare facilities have specialist physicians (pediatricians). 53.68% of facilities have microscope diagnostic equipment; 2.07% have radiology equipment, and only 23.45% have ultrasound machines. More than 62.76% of health facilities are built with non-durable materials and have inadequate waste management systems. The health facilities in disadvantaged neighborhoods of Lubumbashi are mostly private and face numerous challenges, including inadequate equipment, a shortage of qualified staff, and insufficient infrastructure, requiring urgent intervention for improvement.

Conflicts of Interest

The authors declare no conflicts of interest.

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