# Orapuh Journal

# Impact of community health care sites on access to health care for children aged 0 to 5 in the Cilundu and Mukumbi Health Zones, Eastern Kasai, Democratic Republic of the Congo

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## ARTICLE INFO

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## ABSTRACT

**Introduction**

The lack of access to quality healthcare affects nearly half of the world's population, leading to high mortality rates, particularly among children under five years old. This issue is especially prevalent in developing countries like the Democratic Republic of the Congo (DRC), which ranks fourth in child mortality rates. To address this challenge, the DRC has implemented a strategy of establishing Community Care Sites (CCS) in various health zones.

**Purpose**

This study aimed to assess the impact of Community Health Centers (CHCs) on healthcare access in the Cilundu Health Zone (HZ) in the DRC.

**Methodology**

A comparative, quasi-experimental study was conducted in two health zones: Cilundu (benefiting from CCS) and Mukumbi (non-beneficiary). The study involved 444 randomly selected participants, with 148 from the Cilundu HZ and 296 from the Mukumbi HZ.

**Results**

The study found that 75% of the population utilized the CCS for treating illnesses in children aged 0 to 5 years, primarily due to the lower costs and proximity of the facilities. Among the beneficiaries, 49.3% were able to pay for services easily, while 48.6% paid with difficulty. In contrast, in Mukumbi, 56.8% of the population paid with difficulty, and 39.2% struggled significantly. The number of cases treated increased after the introduction of the CCS.

**Conclusion**

The introduction of CCS has positively impacted access to healthcare in the Cilundu Health Zone, making healthcare more accessible and affordable for the local population.

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## INTRODUCTION

The disparity in healthcare access between industrialized and developing countries is stark. The urgency of addressing these disparities is underscored by a UNICEF report, which calls for large-scale interventions to improve maternal and neonatal health (UNICEF, 2009). Despite global strategies aimed at reducing morbidity and mortality, challenges persist, particularly in sub-Saharan Africa. Proven interventions, such as improved nutrition, hygiene, antenatal care, skilled delivery attendance, emergency obstetric and pediatric care, and post-natal visits, are critical for reducing neonatal deaths (Johri et al., 2013; Tsapmene, 2013). In the Democratic Republic of Congo (DRC), one of the highest infant mortality rates in Africa reflects ongoing healthcare challenges. The World Health Organization (WHO, 2018a) reports a child mortality rate of 104 per 1,000 live births, exacerbated by persistently high maternal mortality rates (MICS II, 2001; DHS, 2007; DHS, 2013-2014).

Access to healthcare services is crucial to addressing these rates, yet challenges persist. Data from the Ministry of Health reveal alarmingly low health service utilization, with an average of less than one consultation per person every six years in 2005, covering only around 54% of the population. Recent reports highlight continued under-utilization of health services due to factors such as availability, quality, and financial barriers (MNSP/RDC, 2016). The Bagira Health Zone in South Kivu Province, specifically in Bukavu, faces severe healthcare access issues. The high cost of healthcare for children under five, particularly for vulnerable populations, creates significant financial barriers for households, exacerbating the lack of health insurance and overall access to care. Effective social protection programs, such as Universal Health Coverage, are needed to alleviate the financial burden and improve access to healthcare (Karemere et al., 2017).

Globally, the DRC ranks fourth among six nations contributing to 50% of infant mortality, behind India, Nigeria, and Pakistan, but ahead of Ethiopia. All provinces in the DRC are affected by high child mortality rates, with Kasaï Oriental Province showing rates above the national average (COD-rapport-Atlas-santé, 2016). The fragile health system, marked by disintegration and poor-quality services, contributes to this dire situation. Primary causes of death include malaria, acute respiratory infections, diarrhea, measles, malnutrition, HIV/AIDS, and neonatal issues, compounded by widespread malnutrition and inadequate healthcare access. Notably, 80% of these deaths occur at home or shortly after reaching a healthcare facility. This study aims to analyze healthcare costs for children under five in the Bagira Health Zone and assess challenges and opportunities for improving financial access to healthcare. By addressing these gaps, the study seeks to enhance healthcare access and reduce infant mortality in the DRC. The Cilundu Health Zone in Kasaï Oriental is similarly affected, exacerbated by the Kamuina Nsapu rebellion in 2016–2017. According to the Health Zone Central Office (BCZ, 2018), the population of approximately 201,078, including 103,166 women and 38,230 children under five, faces severe difficulties accessing healthcare due to deteriorating security, inflation, and poor infrastructure. Despite efforts by organizations like Save the Children to improve care access, with 52 out of 56 planned care sites operational, challenges persist due to poor road conditions and lack of transport.

The World Health Organization and the World Bank (2016) emphasize that it is unacceptable for individuals to face death or disability due to preventable reasons. This highlights the need for solidarity and contextually adapted financing systems to ensure equitable healthcare access. Given the high birth rate in the Luba population of Kasai, particularly in the Miabi Territory, addressing healthcare needs for children is crucial. Mawazo et al. (2013) highlight that while community care sites are established to improve access in areas with geographical barriers, they face significant challenges due to the shortage of qualified personnel. Effective operation of these sites requires well-trained and motivated healthcare workers who can offer consistent, high-quality care. The lack of such personnel may result in insufficient supervision, irregular follow-up, and compromised care quality. Additionally, for these sites to be successful, they must be well-integrated into existing health systems, supported with adequate resources, and effectively managed. Without addressing these issues, community care sites may not achieve their goals and could potentially worsen existing health disparities.

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This study will evaluate the impact of Community Care Sites (CCS) in the Cilundu Health Zone, focusing on healthcare access before and after their implementation. Specific objectives include:

- Assessing healthcare access before and after the implementation of CCS in the Cilundu Health Zone.
- Comparing healthcare access conditions in the Cilundu Health Zone before and after CCS implementation.
- Determining beneficiary satisfaction with CCS in caring for children aged 0 to 5.

Given the increase in medical professionals since the early 2000s, a reevaluation of community care site expansion is warranted. The general objective of this work is to determine the impact of Community Care Sites on healthcare access in the Cilundu Health Zone, where children under five face significant barriers to quality care.

**Figure 1:**
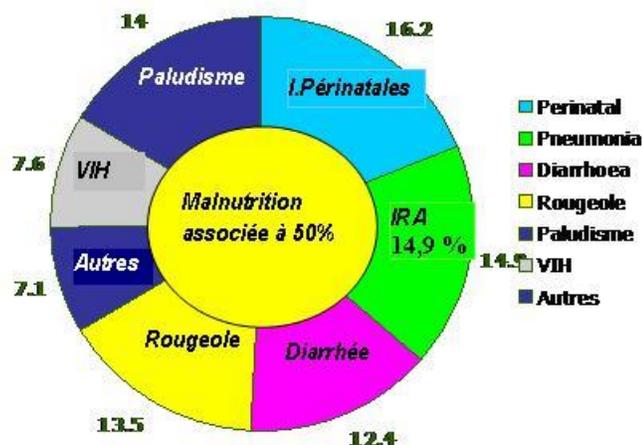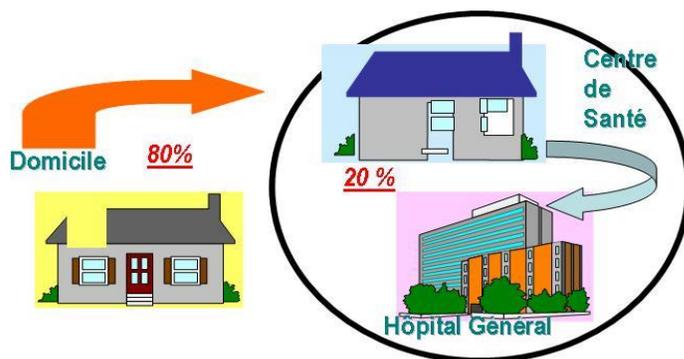Breakdown of causes of death in children under 5 (UNICEF DRC, 2021)



**Figure 2:**
Location of child deaths according to the National Coordination for the Management of Children's Illnesses (2020)



## METHODS

This study is a quasi-experimental research of a correlational and evaluative nature, focusing on the relationship between the establishment of Community Care Sites and access to quality healthcare. It was conducted on the population of the Cilundu Health Zone, which benefits from Community Care Sites, compared to the population of the Mukumbi Health Zone, which does not. The target population included household heads and Titular Nurses. A sample of 148 individuals from the Cilundu Health Zone, considered the exposed or cases, was selected. This sample consisted of 15 Health Areas that benefited from the implementation of Community Care Sites, based on data collected through documentary analysis. The Cilundu sample was matched with the Mukumbi Health Zone sample in a 1:2 ratio, resulting in 296 individuals, for a total sample size of 444.

Due to the complexity of the sample, both exhaustive probability and cluster sampling methods were used. Exhaustive probability sampling included all care providers in both populations. For cluster probability sampling within the population receiving care, a draw proportional to the size of the health areas was applied. The sample size was calculated using the statistical formula for case-control studies:

$$\mathbf{n} = \frac{2.(Z_a + Z_b)^2.P.(1-p)}{(P_o - P_1)^2}$$

A multi-stage sampling technique was utilized in the Cilundu and Mukumbi health zones, each with 148 respondents, organized as follows:

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(a) **First Stage:** Selection of 30 health areas, equally divided between Cilundu and Mukumbi, with 15 health areas in each zone;

(b) **Second Stage:** Identification of 52 community care sites within the Cilundu Health Zone, distributed unevenly across the 15 health areas; and

(c) **Third Stage:** Selection of 444 individuals responsible for children aged 0 to 5, with 148 from Cilundu and 296 from Mukumbi. For each community care site, three statistical units were randomly chosen, ensuring a sample proportional to each health area in Cilundu. Consequently, the calculation for the number of surveys per site was 148 / 52 ≈ 2.8, rounded to approximately 3 household heads or parents per site.

A questionnaire, consisting mainly of closed questions and divided into three sections (identification, financial accessibility, and geographical accessibility), was used for data collection. This instrument was adapted from the survey tool used by the "Association of Studies and Consumption of Languedoc Roussillon" (Lantero, 2019), which focused on difficulties encountered following the 2006 health insurance reform. The design was also influenced by instruments from studies such as those by Bilenge (2001). These sources guided the creation of the survey questionnaire and appendices to match the study's context. The documentary analysis grid was based on a model from UNICEF.

The design of the survey instrument was inspired by the tool used in the survey on healthcare access difficulties conducted by the Association of Studies and Consumption, CFDT of Languedoc Roussillon (2007), as well as instruments from studies such as those by Miaka Mia Bilenge (2001) in the DRC. These references served as the basis for developing the questionnaire and its appendices, which were then tailored to the specific context of the study.

To ensure the content validity and reliability of the instrument, it was reviewed and evaluated by three experts: a PhD in Public Health and Epidemiology, a PhD in Nursing, and a Master of Philosophy and Pediatrician at the Ministry of Health. Their feedback helped refine and adapt the tool, aligning it with the research objectives and questions. Following their input, the instrument was tested in a pre-survey to confirm its validity and reliability. The pre-survey involved 30 parents or guardians of children aged 0 to 5 years, selected from health areas with and without the establishment of Community Care Sites outside the Cilundu and Mukumbi health zones, respectively. The results facilitated adjustments to question phrasing for clarity and enabled an assessment of the methodological and logistical aspects of the study. This process resulted in the final version of the survey instrument.

Ethical considerations were rigorously adhered to, including obtaining informed consent, ensuring confidentiality, and maintaining respondent anonymity. Data collection was managed using Epi Info software, version 3.5.4 (July 30, 2012), and data compilation was conducted in Microsoft Excel 2007. Descriptive statistics, including frequency tables, percentages, proportions, and averages, were used for data presentation and interpretation.

Statistical analysis encompassed both univariate and bivariate methods. Univariate analysis described the sample, detailing the distribution of each variable. Bivariate and multivariate analyses explored relationships between variables using appropriate statistical tests, such as the Chi-square test and prevalence ratio. Pearson Chi-square and Mantel-Haenszel tests were employed to evaluate and interpret the results. The significance level was set at 5%, indicating that any probability below this threshold suggests a statistically significant difference, while probabilities above this threshold indicate no significant difference.

This methodological rigor ensured that the findings accurately reflected the study's objectives, providing a robust foundation for drawing meaningful conclusions about the relationship between the location of Community Care Sites and access to quality healthcare.

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## RESULTS

*Socio-cultural characteristics of study subjects*

**Table 1** shows the level of education of the subjects studied.

**Table 1:**
Distribution of study subjects by level of education

| Level of education | Cilundu | | Mukumbi | | $\chi^2$ | ddl | p | Sign. |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | n | % | n | % | | | | |
| No education | 36 | 24.3 | 221 | 74.7 | | | | |
| Primary | 74 | 50.0 | 41 | 13.9 | | | | |
| Secondary | 38 | 25.7 | 26 | 8.8 | | | | |
| University | 0 | 00.0 | 8 | 1.8 | | | | |
| Total | 148 | 100 | 296 | 100 | 116.5 | 3 | 0.0000 | S |

**Table 1** indicates that 50% of respondents in Cilundu have primary education. In Mukumbi, 74.7% of respondents had no formal education. A comparison of the two areas shows a positive difference in terms of the $\chi^2$ of 116.5 and a *p*-value of 0.0000, which is less than 0.05.

*Occupation of the subjects*

**Table 2** shows the distribution of data in relation to occupation.

**Table 2:**
Breakdown of occupancy data

| Occupation | Cilundu | | Mukumbi | | $\chi^2$ | ddl | p | Sign. |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | n | % | n | % | | | | |
| Housewives | 4 | 2.7 | 74 | 25.0 | | | | |
| Farmers | 123 | 83.1 | 204 | 68.9 | | | | |
| Shopkeepers | 12 | 8.1 | 12 | 4.1 | | | | |
| Civil servants | 5 | 3.4 | 2 | 0.7 | | | | |
| Education | 3 | 2.0 | 2 | 0.7 | | | | |
| Unemployed | 1 | 0.7 | 2 | 0.7 | | | | |
| Total | 148 | 100 | 296 | 100 | 39.79 | 5 | 0.0000 | S |

**Table 2** reveals that respondents who cited agriculture as their main occupation ranked first in both health zones, with 83.1% and 68.9%, respectively. A comparison of the results for these two health zones reveals a statistically significant difference with respect to $\chi^2$ = 39.79 and a *p*-value of 0.0000, which is less than 0.05.

*Choosing care for children aged 0-5 years*

*The choice of care for children after implantation of SSC*

**Table 3** presents the data relating to the use of child care after SSC implantation.

**Table 3:**
Breakdown of data relating to recourse for child care after SSC implantation

| Lieu de la PI | Cilundu | | Mukumbi | | $\chi^2$ | ddl | p | Sign. |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | n | % | n | % | | | | |
| SSC | 111 | 75.0 | 0 | 0.00 | | | | |
| CS/Hopital | 28 | 18.9 | 264 | 89.2 | | | | |
| Praying | 1 | 0.7 | 6 | 2.0 | | | | |
| Self medication | 7 | 4.7 | 24 | 8.1 | | | | |
| Traditional healers | 1 | 0.7 | 2 | 0.7 | | | | |
| Total | 148 | 100 | 296 | 100 | 298.8 | 4 | 0.0000 | S |

In the Cilundu health zone, community health centres were the most frequented by respondents for childcare purposes (75%), followed by health centres and hospitals (18.9%). In the Mukumbi health zone, health centres and hospitals were used most frequently (89.2%). Comparing the results for these two health zones reveals a positive statistical difference, with $\chi^2$ = 298.8 and a *p*-value of 0.0000, below the 0.05 threshold.

**Figure 4** shows data on the use of childcare

**Figure 4:**
Recourse to childcare services
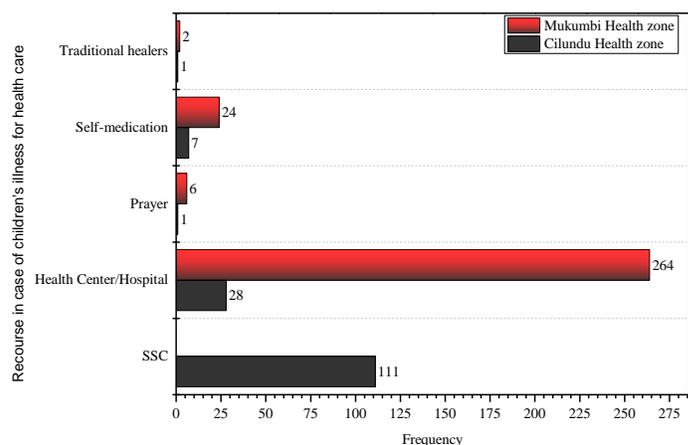


**Table 4:**
Distribution of respondents according to reasons for choosing the child's place of care

| Reasons | Cilundu | | Mukumbi | | $\chi^2$ | ddl | p | Obs |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | n | % | n | % | | | | |
| Less costly | 61 | 43,9 | 63 | 23,6 | | | | |
| Better CEP | 34 | 24,5 | 134 | 50,2 | | | | |
| Speed | 13 | 9,4 | 14 | 5,2 | | | | |
| Short distance | 31 | 22,3 | 56 | 21,0 | | | | |
| Total | 139 | 100 | 267 | 100 | 29,34 | 3 | 0.0001 | S |

**Table 4** shows that respondents in the Cilundu health zone cited the least expensive care as the reason for choosing the place of care (43.9%), followed by best care

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(24.5%) and short distance (22.3%). In the Mukumbi health zone, better care was cited most often (50.2%), followed by cheaper care and distance, with 23.6% and 21.0%, respectively. The speed of care was the least cited reason in both health zones. A comparison between these groups shows a statistically significant difference ($\chi^2$ cal. 29.34 > $\chi^2$ tab. 7.81, *p*-value 0.0001 < 0.05).

**Figure 5:**
Distribution of respondents according to their recourse to care in the event of children's illness prior to the introduction of SSCs



121 (81,76%) — 16 (10,81%) — 8 (5,41%) — 3 (2,03%)

- Health Center/Hospital
- Prayer
- Self-medication
- Traditional healers
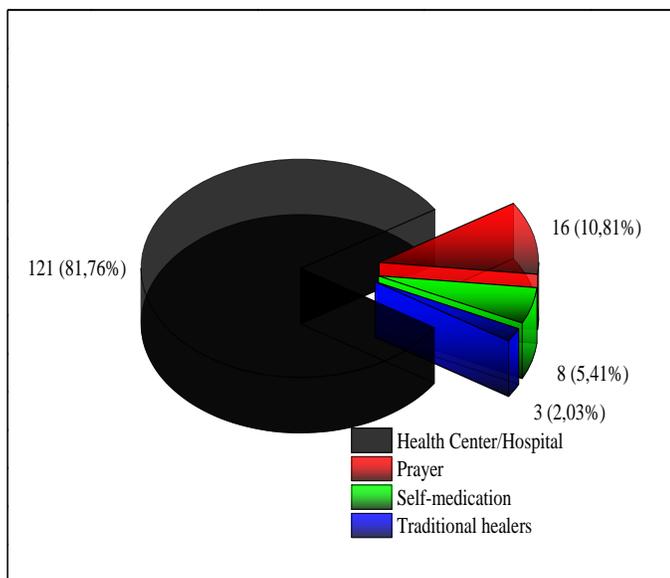
**Figure 5** shows that prior to the introduction of SSCs, most carers in this health zone took their children to health centres and hospitals as a first resort (81.8%), followed by self-medication (10.8%).

*Financial access to healthcare for children aged 0-5 years*

**Table 6:**
Breakdown of data according to the method of payment for children's care at the SSC

| Modalité | Cilundu | | Mukumbi | | $\chi^2$ | ddl | P< | Sign. |
|---|---|---|---|---|---|---|---|---|
| | n | % | n | % | | | | |
| Package/case | 11 | 7.4 | 10 | 3.4 | | | | |
| Flat rate all | 137 | 92.6 | 279 | 94.3 | | | | |
| Case by case | 0 | 0.0 | 7 | 2.4 | | | | |
| Total | 148 | 100 | 296 | 100 | 6.95 | 2 | 0.0308 | NS |

**Table 6** shows that 92.6% of respondents in Cilundu and 94.3% in Mukumbi reported using a lump-sum payment method for illness cases, followed by payment per case. A comparison of the two groups reveals a slightly significant difference ($\chi^2$ cal. 6.95 > $\chi^2$ tab. 5.99, *p*-value 0.0308 < 0.05).

**Table 7:**
Distribution of data according to the cost of managing malaria, ARI, and diarrhoeal diseases before the introduction of SSCs

| Malaria | Cilundu | | Mukumbi | | $\chi^2$ | ddl | p | Sign. |
|---|---|---|---|---|---|---|---|---|
| | n | % | n | % | | | | |
| <1$ | 80 | 54.1 | 0 | 0.0 | | | | |
| 1-5$ | 56 | 37.8 | 57 | 19.3 | | | | |
| 6-10$ | 2 | 1.4 | 23 | 7.8 | | | | |
| ≥11$ | 10 | 6.8 | 216 | 73.0 | | | | |
| Total | 148 | 100 | 296 | 100 | 265.59 | 3 | 0.0000 | S |
| IRA | | | | | | | | |
| <1$ | 72 | 48.6 | 6 | 2.0 | | | | |
| 1-5$ | 57 | 38.5 | 59 | 19.9 | | | | |
| 6-10$ | 3 | 2.0 | 56 | 18.9 | | | | |
| ≥11$ | 16 | 10.8 | 175 | 59.1 | | | | |
| Total | 148 | 100 | 296 | 100 | 209.93 | 3 | 0.0000 | S |
| Diarrhoeal Illnesses | | | | | | | | |
| 1$ | 68 | 45.9 | 0 | 0.0 | | | | |
| 1-5$ | 60 | 40.5 | 91 | 30.7 | | | | |
| 6-10$ | 9 | 6.1 | 123 | 41.6 | | | | |
| ≥11$ | 11 | 7.4 | 82 | 27.7 | | | | |
| Total | 148 | 100 | 296 | 100 | 199.9 | 3 | 0.0000 | S |

In the Cilundu zone, more than half of respondents spent less than $1 on treating malaria (54.1%), followed by those who spent $1 to $5 (37.8%). In the Mukumbi zone, 74.0% of respondents spent more than $11, followed by those spending between $1 and $5. Comparison between these health zones shows a highly significant difference ($\chi^2$ cal. 265.59 > $\chi^2$ tab. 7.81, *p*-value 0.0000 < 0.05).

A similar pattern was observed for respiratory diseases, where 48.6% of respondents in Cilundu spent less than $1, compared to 59.1% in Mukumbi who spent more than $11, revealing a statistically significant difference ($\chi^2$ cal. 209.83 > $\chi^2$ tab. 7.81, *p*-value 0.0000 < 0.05). For diarrhoeal diseases, 45.9% of Cilundu respondents spent less than $1, while 41.6% of Mukumbi respondents spent $6 to $10. This comparison also shows a highly significant difference ($\chi^2$ cal. 199.9 > $\chi^2$ tab. 7.81, *p*-value 0.0000 < 0.05).

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**Table 8:**
Distribution of data according to the cost of care for children aged 0-5 at SSC level after implementation

| Cost | Cilundu | | Mukumbi | | $\chi^2$ | ddl | p | Sign. |
|---|---|---|---|---|---|---|---|---|
| | n | % | n | % | | | | |
| **< 1$** | 144 | 97.3 | 0 | 00.0 | | | | |
| **≥ 1$** | 4 | 2.7 | 0 | 00.0 | | | | |
| **Total** | **148** | **100** | **0** | **00.0** | | | | |
| **Satisfied** | | | | | | | | |
| Yes | 131 | 88.5 | 183 | 61.8 | | | | |
| | | | | | 4.7 2.7 – 8.4) | 33.3 | 1 | 0.0000 | S |
| No | 17 | 11.5 | 113 | 38.2 | | | | |
| **Total** | **148** | **100** | **296** | **100** | | | | |
| **Paid for Healthcare** | | | | | | | | |
| Easily | 3 | 49.3 | 12 | 4.1 | | | | |
| Difficulty | 2 | 48.6 | 168 | 56.8 | | | | |
| Painfully | | 2.0 | 16 | 39.2 | | | | |
| **Total** | **148** | **100** | **296** | **100** | | 157.6 | 2 | 0.0000 | S |

After establishing community health care sites, almost all respondents in Cilundu (97.3%) reported spending less than $1. In Mukumbi, satisfaction with care was 88.5% and 61.8%, respectively. This difference is statistically significant ($\chi^2$ cal. 33.3 > $\chi^2$ tab. 3.84, *p*-value 0.0000 < 0.05). Regarding the financial burden, 85.1% of Cilundu respondents reported paying for care easily compared to 14.9% for Mukumbi, where 70% struggled to pay. This difference is highly significant ($\chi^2$ cal. 157.66 > $\chi^2$ tab. 5.99, *p*-value 0.0000 < 0.05).

*Geographical access*

**Table 9:**
Breakdown of data by distance between household and CS or PS

| Distance | Cilundu | | Mukumbi | | $\chi^2$ | ddl | p | Sign. |
|---|---|---|---|---|---|---|---|---|
| | n | % | n | % | | | | |
| < 5 km | 45 | 30.4 | 29 | 9.8 | | | | |
| 5 – 10 Km | 95 | 64.2 | 247 | 83.4 | | | | |
| 11 -15 Km | 8 | 5.4 | 3 | 1.0 | | | | |
| ≥ 16 Km | 0 | 00.0 | 8 | 5.7 | | | | |
| **Total** | **148** | **100** | **296** | **100** | 46.07 | 3 | 0.0000 | S |

In both zones, most respondents estimated that the distance to the health centre varied between 5 and 10 km, with 64.2% in Cilundu and 83.4% in Mukumbi. A statistically significant difference is noted ($\chi^2$ cal. 46.07 > $\chi^2$ tab. 7.81, *p*-value 0.0000 < 0.05).
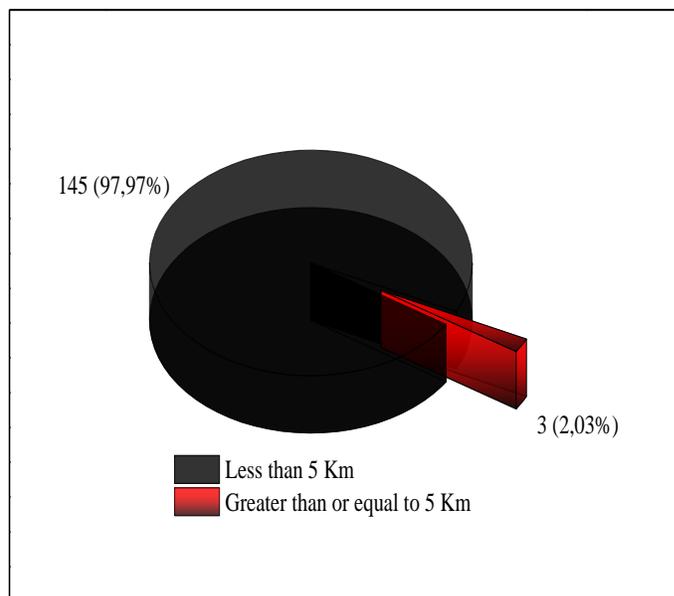
**Table 10:**
Breakdown of data relating to natural barriers making access to the health centre difficult

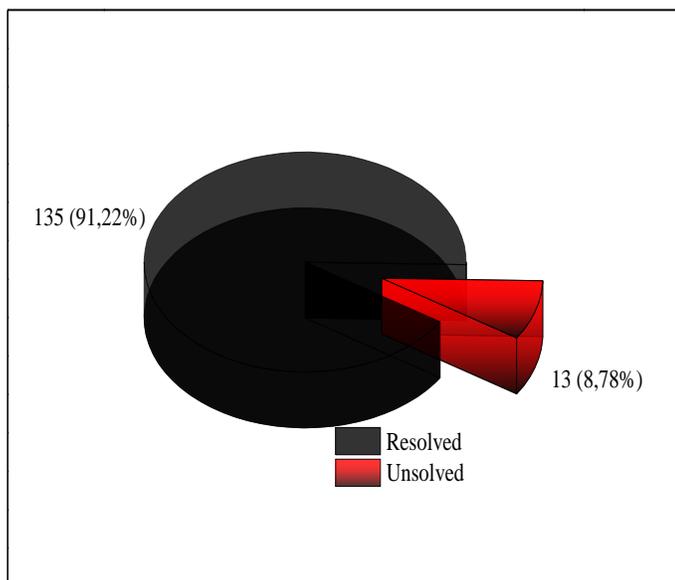| Barrier | Cilundu | | Mukumbi | | OR (IC 95) | $\chi^2$ | ddl | p | Sign. |
|---|---|---|---|---|---|---|---|---|---|
| | n | % | n | % | | | | | |
| **Exists** | 31 | 20.9 | 256 | 86.5 | | | | | |
| | | | | | 0.04 (0.02-0.06) | 185.01 | 1 | 0.0000 | S |
| **Doesn't exist** | 117 | 79.1 | 40 | 13.5 | | | | | |
| **Total** | **148** | **100** | **296** | **100.0** | | | | | |
| **Barrier types** | | | | | | | | | |
| River | 26 | 83.9 | 82 | 32.0 | | | | | |
| Ravine | 4 | 12.9 | 3 | 1.2 | | | | | |
| Forest | 0 | 00.0 | 16 | 6.3 | | | | | |
| Mountain | 1 | 3.2 | 155 | 60.5 | | | | | |
| **Total** | **148** | **100** | **296** | **100** | | 54.0 | 3 | 0.0000 | S |

The majority of respondents in Cilundu did not recognise the existence of natural barriers (74.5%), while 25.5% did in Mukumbi. This comparison shows a highly significant difference ($\chi^2$ cal. 185.01 > $\chi^2$ tab. 3.84, *p*-value 0.0000). Rivers were the most common barrier in Cilundu (82.9%), while mountains ranked highest in Mukumbi (60.5%).

**Figure 6:**
Distance between the most distant household and the SSC



145 (97,97%)

3 (2,03%)

Less than 5 Km
Greater than or equal to 5 Km

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**Figure 7:**

Distribution of data according to responses concerning the resolution of the distance problem by implementing SSCs



Most parents or carers acknowledged that the implementation of SSCs resolved geographical access issues, with 91.2% agreeing and 8.8% disagreeing.

**Table 11:**

Transfers of sick children

| Transfert | Cilundu | | Mukumbi | | OR (IC 95) | $\chi^2$ | ddl | p | Sign. |
|---|---|---|---|---|---|---|---|---|---|
| | n | % | n | % | | | | | |
| Yes | 143 | 96.6 | 30 | 10.1 | | | | | |
| | | | | | 246.8 (99.8-730) | 309.6 | 1 | 0.0000 | S |
| No | 5 | 3.4 | 266 | 89.9 | | | | | |
| Total | 148 | 100 | 296 | 100 | | | | | |

**Table 11** shows that 96.6% of children were transferred to health centres or hospitals in Cilundu, compared to 10.1% in Mukumbi. This is a highly significant difference ($\chi^2$ cal. 309.6 > $\chi^2$ tab. 3.84, *p*-value 0.0000).

**Table 12:**

Beneficiary satisfaction with care received

| Satisfaction | Cilundu | | Mukumbi | | OR (IC 95) | $\chi^2$ | ddl | p | Sign. |
|---|---|---|---|---|---|---|---|---|---|
| | n | % | n | % | | | | | |
| Yes | 132 | 89.2 | 256 | 97.0 | | | | | |
| | | | | | 1,3(0,7-2,4) | 0,65 | 1 | 0,4192 | NS |
| No | 16 | 10.8 | 40 | 3.4 | | | | | |
| Total | 148 | 100 | 296 | 100 | | | | | |

Most respondents in both zones were satisfied with the quality of care (89.2% for Cilundu and 97% for Mukumbi). The comparison shows no statistically significant difference ($\chi^2$ cal. 0.65, *p*-value 0.4192 > 0.05).

*Data relating to the literature review*

**Table 13:**

Distribution of results according to visitor numbers before and after the introduction of SSCs

| Healthcare areas | Population aged 0 to 5 | HEALTHCARE CENTRE | | SSC | |
|---|---|---|---|---|---|
| | | Number of cases before SSC | Number of cases after | Number of cases expected | Cases received |
| Bkua Mulumba | 1372 | 82 | 46 | | 71 |
| Bkua Nsambua | 223 | 132 | 118 | | 9 |
| Bkua Kamba | 140 | 143 | 84 | | 14 |
| Bkua kasanga | 492 | 93 | 105 | | 31 |
| Kaleya | 563 | 26 | 75 | | 31 |
| Bkua Mbuyi | 1469 | 212 | 90 | | 79 |
| Ciloba | 488 | 58 | 73 | | 20 |
| Average | | 107 | 84 | | 36 |

In Cilundu, only 7 of 15 health areas had pre-SSCs data. Post-SSCs, the average number of cases received was slightly higher (120 compared to 84 before).

**Table 14:**

Summary of the main results

| N° | VARIABLES | % | $\chi^2$ | ddl | p | Sign. |
|---|---|---|---|---|---|---|
| A | **Socio-cultural, economic and demographic characteristics** | | | | | |
| | o Marital status | | 43.3 | 3 | 0.0000 | S |
| | o Low level of education | | 116.5 | 3 | 0.0000 | S |
| B | **Results relating to the provision of care for children aged 0-5 years** | | | | | |
| | o Recourse for child treatment after implantation of SSC | | 298.8 | 4 | 0.0000 | S |
| C | **Results relating to financial access to care** | | | | | |
| | o Less costly ECP as a reason for choosing SSC. | | 29.3 | 3 | 0.0001 | S |
| | o Fewer plugs used at SSC level than at CS level | | 85.5 | 1 | 0.0000 | S |
| | o High cost prior to SSC implementation | | 209.8 | 3 | 0.0000 | S |
| | o Cost less than $1 at SSC level | 97.3 | | | | |
| | o Difficulties in paying for medical treatment | | 157.66 | 2 | 0.0000 | S |
| D | **Results related to Geographic access** | | | | | |
| | o Long distance between household and CS or PS | | 46.07 | 3 | 0.0000 | S |
| | o Lack of means of transport | | 104.9 | 1 | 0.0000 | S |
| | o Bicycles and motorbikes as a means | | 227.03 | 1 | 0.0000 | S |
| | o Transferring patients by SSC | | 309.6 | 1 | 0.0000 | S |
| | o Satisfaction with the cost of SSC | | 33.3 | 1 | 0.0000 | S |

The study identified several socio-cultural, economic, and demographic factors influencing healthcare decisions for children aged 0 to 5 in Cilundu. Marital status significantly impacted decisions regarding child care, while a low level of education often hindered parents or guardians from making informed choices. The results indicate that the introduction of Community Care Sites (CSS) improved access to healthcare, with lower costs typically under $1, making CCS the primary choice for many. However, financial challenges persisted, reflecting the population's poverty. Geographical barriers, such as long distances to care sites and inadequate transportation, further complicated access. Despite these challenges, the population expressed satisfaction with the cost of care at the Community Care Sites post-implementation.

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Documentary analysis revealed an increase in the number of cases received by health facilities after CCS introduction, averaging 120 cases per month compared to 107 before. Non-performing Community Health Care Sites accounted for 55.8%, while 85.8% of cases adhered to the medicine usage protocol.

## DISCUSSION

According to the results of this study **(Table 4)**, a low level of education was observed among respondents in both Cilundu and Mukumbi, with the odds ratio for Cilundu being 0.35 times lower than that for Mukumbi. This suggests that the low level of education negatively influences children's access to care in these two health zones. This finding is consistent with previous research, such as that by Commeyras et al. (2006), which found that the mortality rate for children under five was higher in households where the head of the household was less educated or was a woman, particularly in rural areas where morbidity rates were also higher. Ross et al. (2012) further confirmed that a low level of education adversely affects the population's health status due to a lack of understanding of health-related information and decision-making processes. Baya (1998), in a study on parental education and child survival in Burkina Faso, also found that children of less educated parents had higher mortality rates, while those with better-educated fathers had greater chances of survival.

Regarding the occupation of parents or guardians **(Table 2)**, the primary occupation in both health zones is subsistence farming (83.1% in Cilundu and 68.9% in Mukumbi). This is attributed to the absence of businesses, limited civil service opportunities, and the decline in artisanal diamond mining in these areas. This finding contradicts the study by Tshimungu et al. (2012), which reported that civil servants were the most common occupation in Kabinda, at 55.5%.

**Table 3** shows that 75% of respondents in the Cilundu health zone chose community care sites, compared to 18.9% who preferred health centres and/or hospitals, citing the quality of care and proximity as reasons. In contrast, 89.9% of respondents in the Mukumbi health zone, where community care sites are not available, opted for health centres and/or hospitals. This result is higher than that of

Masudi et al. (2012), who found that access to primary health care was 29% for curative care and 32% for maternal and child care promotion, both below WHO standards of 50% for curative care and 80% for preventive care. Additionally, Nkoma (2010) indicated that self-medication is often the first choice in the event of illness, followed by biomedicine. It is worth noting that community care sites provide primary care for mild cases and refer all patients with severe symptoms.

Regarding the reasons for seeking care, the most common reason for choosing the SSC was the lower cost, with 43.9% of respondents citing affordability, followed by 24.4% mentioning better quality, and 22.3% citing proximity. In contrast, in the Mukumbi health zone, the primary reason for choosing a health centre was the perceived better quality of care (50.2%). The findings in Cilundu align with Commeyras (2006), who noted that populations typically adjust their healthcare-seeking behaviour based on financial resources, geographical access, and perceptions of illness, with the poorest 60% having limited access to care. This is in contrast to Chassang (2012), who reported that 95% of the French population can access local care within 15 minutes. Masudi et al. (2012) found that 89.2% of households attributed the lack of financial resources as the main barrier to primary healthcare, leading to complications for 89.2% and death for 91.5% of cases. Nikiéma, Rossier, and Ridde (2010) also emphasised that financial access is the most significant reason for the non-use of care (51.3%). Distance also plays a crucial role, as 64.2% of parents and 83.4% of guardians in Cilundu and Mukumbi reported that the distance to the nearest health centre or hospital was between 5 and 10 km. The WHO (2016) recommends that walking time to care should not exceed 15 minutes, and the guidelines for establishing Community Care Sites suggest a maximum distance of 5 km. Lamine (2008) observed that in West Africa, particularly Guinea, distances over 5 km are a significant barrier, with urban residents primarily using regional hospitals or CHUs (48%), and rural residents favouring health centres (37%). Chassang (2012) further noted that 1% of the French population, living in 4% of the country's communes, are more than 15 minutes away from a general practitioner (GP). The absence of appropriate transport means and the reliance on bicycles and motorbikes for

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patient transport severely hinders access to convenient and safe healthcare.

The inaccessibility to care is further compounded by the inadequacy of available transportation means. Despite the majority of respondents in both the Cilundu (58.8%) and Mukumbi (96.6%) health zones acknowledging the existence of transportation, the options are largely unsuitable: 92% rely on bicycles in Cilundu, which benefits from community sites, while 91.2% use motorbikes in Mukumbi. These modes of transport are inadequate for safely moving sick children from home to healthcare facilities. In terms of the organisation of the transfer system, nearly all parents or guardians in the Cilundu zone who benefit from SSCs recognise the existence of a referral system (96.6%), compared to just 10.1% in Mukumbi, where such a system is almost non-existent. This indicates that the referral and counter-referral process is functioning effectively at SSCs in Cilundu, as outlined in the implementation guidelines, which aim to identify signs of severe illness in children aged 0 to 5 and refer them to health centres or hospitals for further care. In contrast, in Mukumbi, all care is concentrated at the health centre level, possibly due to the absence of a general referral hospital.

**Study Limitations:** The quasi-experimental design, lacking randomisation, could limit the ability to control for confounding variables and establish causality, potentially affecting the reliability of the findings. Selection and reporting biases could influence outcomes, as the chosen zones and respondents' assessments might not fully reflect all relevant factors. The generalisability of the results might be constrained by context-specific factors such as local healthcare infrastructure and varying socio-economic conditions. Additionally, disparities in the implementation of Community Health Care Sites (CHCS) and data collection issues could complicate the interpretation of results. Socio-economic and cultural barriers could also affect access to care and outcomes. These limitations underscore the need for cautious interpretation and highlight areas for improvement in future research and interventions.

## CONCLUSION AND RECOMMENDATIONS
The study aimed to evaluate the impact of Community Care Sites (CCS) on healthcare access for children aged 0 to 5 in the Cilundu health zone compared to the Mukumbi health zone in Kasai Oriental. The introduction of CCS has led to notable improvements in both financial and geographical accessibility to healthcare. However, despite following the implementation protocols and guidelines, the intrinsic performance of the CCS remains below the expected 50% efficiency benchmark. This indicates that while CCS has facilitated better access to healthcare, challenges persist in optimising their effectiveness. For public health policy, this underscores the need for further enhancements in the CCS model to fully realise its potential. Future research should focus on identifying and addressing the specific factors contributing to the suboptimal performance of CCS, such as resource allocation, training, and community engagement. Additionally, interventions should be tailored to address the barriers affecting CCS effectiveness and ensure that they meet the healthcare needs of the target population more effectively.

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