

Research

Pay for a free service, access to cesarean section in the slums of Dakar

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Abstract

Background In sub-Saharan Africa, equitable access to cesarean section remains a major challenge for reducing maternal and neonatal mortality, particularly among disadvantaged populations. This situation is further exacerbated in slums, where women face significant financial barriers to accessing expensive healthcare services, such as cesarean. Within this context, this paper aims to study access to emergency cesarean services among women living in the slums of Dakar, considering the free cesarean policy implemented in Senegal since 2005.

Method Quantitative data were collected using a cross-sectional retrospective approach, from 18 health facility managers and 260 women living in slums in Dakar who had undergone cesarean delivery between July and December 2022. The surveys aimed to collect socio-demographic data on women and the costs they paid to have a cesarean section, as well as on the application of the policy of free caesarean sections by public health facilities. The data were processed using Stata.

Results The results indicated that poor women residing in Dakar slums do have access to emergency cesarean section services in public health facilities. However, a significant portion of these women come from impoverished households and lack higher education, making them more vulnerable to financial constraints when seeking a C-section. Despite cesarean sections being performed primarily based on medical necessity, regardless of the woman's economic status, ethnicity, or educational background, women often find themselves having to pay substantial amounts to undergo the procedure. This is particularly concerning, as cesarean sections are intended to be entirely free in public health facilities in Senegal. Health facility managers attribute this financial burden to the State, which recurrently delays reimbursements for cesarean sections, forcing them to charge women higher prices for the procedure.

Conclusion A more rigorous enforcement of the policy for free cesarean section could greatly enhance access to this obstetric practice for women living in the slums of Dakar.

Keywords Cesarean section · Dakar · Slums · Women

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1 Introduction

Cesarean section (CS) is a surgical procedure designated to prevent maternal and neonatal mortality. Since 2000, CS rates have doubled in several countries, with a number of procedures performed without proper obstetric indications [1]. When CS is conducted without medical necessity, it can elevate the risk for both short-term and long-term health complications for mothers and their children [2, 3]. In sub-Saharan Africa, however, CS rates remain below 10%, primarily because most poor women lack adequate access to the procedure [1]. According to WHO, in 2020, approximately 800 women died each day due to preventable causes related to pregnancy and childbirth, 70% of these deaths occurring in sub-Saharan Africa [4], where the risk of neonatal deaths is the highest in the world [5]. In many sub-Saharan African countries, women travel long distances to reach health facilities and often cannot afford the expensive surgical services required for CS [6].

Geographical and financial barriers to access to CS are among the factors contributing to high maternal and neonatal mortality rates in low-income countries [7]. In response, several countries in sub-Saharan Africa introduced free cesarean policies in the early 2000s [8]. For instance, Senegal, Mali and Niger implemented a free CS policy in 2005, covering all costs associated with cesarean deliveries. In Burkina Faso, a partial subsidy was introduced, with the state covering 80% of the CS cost and the family covering the remaining 20% [6]. In Senegal, the policy was designed to improve geographical access to quality care and, in general, to make childbirth, including cesarean section, free of charge [9]. This free service includes a lump sum reimbursement to health facilities for any emergency CS performed, covering the surgery, associated procedures (including surgical supplies), a CS kit, and hospitalization for up to 5 days.

Several studies have examined the impact of free CS policy in Senegal. Some have reported that the policy has led health facilities to increase the number of cesarean sections, sometimes without medical indication, as a means of generating revenue through state reimbursements [8, 10, 11]. Other studies have focused on the Dakar region, examining the epidemiological and clinical aspects of CS [12], the practices of hospitals [13, 14], and the perceptions and experiences of women who have undergone the procedure [15].

This article aims to contribute to the ongoing debate on cesarean sections in Dakar, where 23% of Senegal's population resides. Specifically, it addresses the financial accessibility of women living in the slums of the Senegalese capital; a topic that has been inadequately documented in the literature despite its importance in understanding access for poor women and assessing the impact of the free CS policy. Few studies have explored the financial accessibility of CS in Dakar within the context of the free CS policy, those that have are outdated [8, 11], lacking information on the socio-economic characteristics and residential locations of women who have undergone the procedure.

Focusing on slums is particularly relevant, as numerous studies have highlighted the inequalities in access to CS, which disproportionally affect poor women compared to their wealthier counterparts [16–21]. However, little evidence exists to clarify which impoverished women gain access to CS and the cost they incur for the service. Slums are the most disadvantaged areas in large cities [22–24], making them likely to be inhabited by poor populations, including women. This focus thus enhances the relevance of the study [25].

The objective of this study is to explore the financial access to emergency cesarean sections of women living in Dakar's slums, emphasizing their socio-economic characteristics and the costs they incur despite the free CS policy. We hypothesize that while women in Dakar's slums have access to emergency CS, they continue to bear significant costs, contributing to further impoverishment.

2 Methodology

2.1 Study design

We conducted a quantitative, cross-sectional and retrospective study. Data were collected from health facilities providing CS and women aged 18 and above who experienced the procedure between July and December 2022. The study area is limited to Dakar, covering seven of its ten health districts. The exclusion of the three other health districts was due to their very low rate of cesarean sections [26]. Each health facility surveyed was geo-referenced, allowing for a comparative and spatial analysis of the data based on key indicators.

2.2 Sampling and sample size

The sampling process was conducted in three distinct stages. First, 46 slum areas within Dakar were identified. Second, 18 health facilities providing cesarean section services in these areas were considered and surveyed. Finally, women who had undergone a cesarean section within the six months prior to the survey, specifically between July and December 2022, were selected from the surveyed health facilities for participation. The decision to focus on this 6-month period was intentional, as it ensured the collection of a representative sample of the target population while reducing the time required to analyze medical records over an extended period.

2.2.1 Identification of slums

For the identification of slums, the study utilized the classification established by Ndiaye [27] and the Dakar Urban Development Strategy document [28]. This classification divides neighborhoods into two categories. The first includes regular neighborhoods, consisting of residential and working-class areas. The second category encompasses slums, which are composed of irregular settlements and traditional neighborhoods.

A list of identified slums was provided to the study supervisors, who were medical doctors recruited for the study. Their role was to review the birth and operating room registers to identify women residing in these eligible neighborhoods. This process involved two key steps: first, creating a comprehensive list of eligible women, and second, establishing a quota for the survey. A random draw without replacement was conducted to select participants for the survey.

Once the participants were selected, they were invited to a meeting to conduct interviews, which were carried out only after obtaining their consent to participate in the study.

2.2.2 Health facilities survey

The study targeted 13 public health facilities in the Dakar region that have consistently performed cesarean sections for several years. These facilities were unevenly distributed across the health districts of Dakar and were all part of the free cesarean section policy. A survey was conducted across these public health facilities, which were expected to serve a majority of poor women benefiting from the policy.

While there was an initial intention to include private clinics offering cesarean sections, only 7 out of the 12 targeted private facilities participated in the survey, as some declined to take part. Of these 7 facilities, 2 lacked operating theaters at the time of the survey and were therefore excluded from the data analysis. The aim was to determine if women living in slums within these districts were accessing cesarean sections in private clinics.

In total, we conducted interviews with 18 managers across both public (13) and private (5) health facilities offering cesarean sections in Dakar. The primary objective was to assess the infrastructure and availability of medical staff necessary to perform CS, as well as to identify the cost of CS in these health facilities.

2.2.3 Household survey of women who have undergone cesarean section

Data collectors were instructed to first obtain consent from all women who had undergone CS at the health facilities before sharing their contact information with the research team. This process allowed us to reach out to the women directly, secure their consent, and proceed with the interview. After reviewing the operating room registers and determining the number of eligible women, a representative sample was selected.

This methodology allowed us to survey 260 women from Dakar's slums who underwent cesarean sections between July and December 2022. The survey explored their characteristics, geographical access to health facilities, incurred expenses, and satisfaction with the service received. After excluding certain cases, the final financial access analysis included 240 women who had emergency cesarean sections in public health facilities, enabling a better assessment of the free cesarean section policy implementation. The health facilities involved in this study are located across four departments within the Dakar region. Due to its demographic significance and the density of its health facilities, the Dakar department accounts for 11 of the surveyed health facilities, compared to 2 in Pikine, 3 in Guédiawaye, and 2 in Rufisque. These facilities are distributed across different municipalities as shown in Fig. 1.

The survey covered the main types of health facilities providing cesarean sections in Senegal. Of the facilities surveyed, 33% were national hospitals, 17% were district hospitals, 22% were health centers, and 28% were private clinics. Overall, 72% of the health facilities involved in this study were public, while 28% were private.

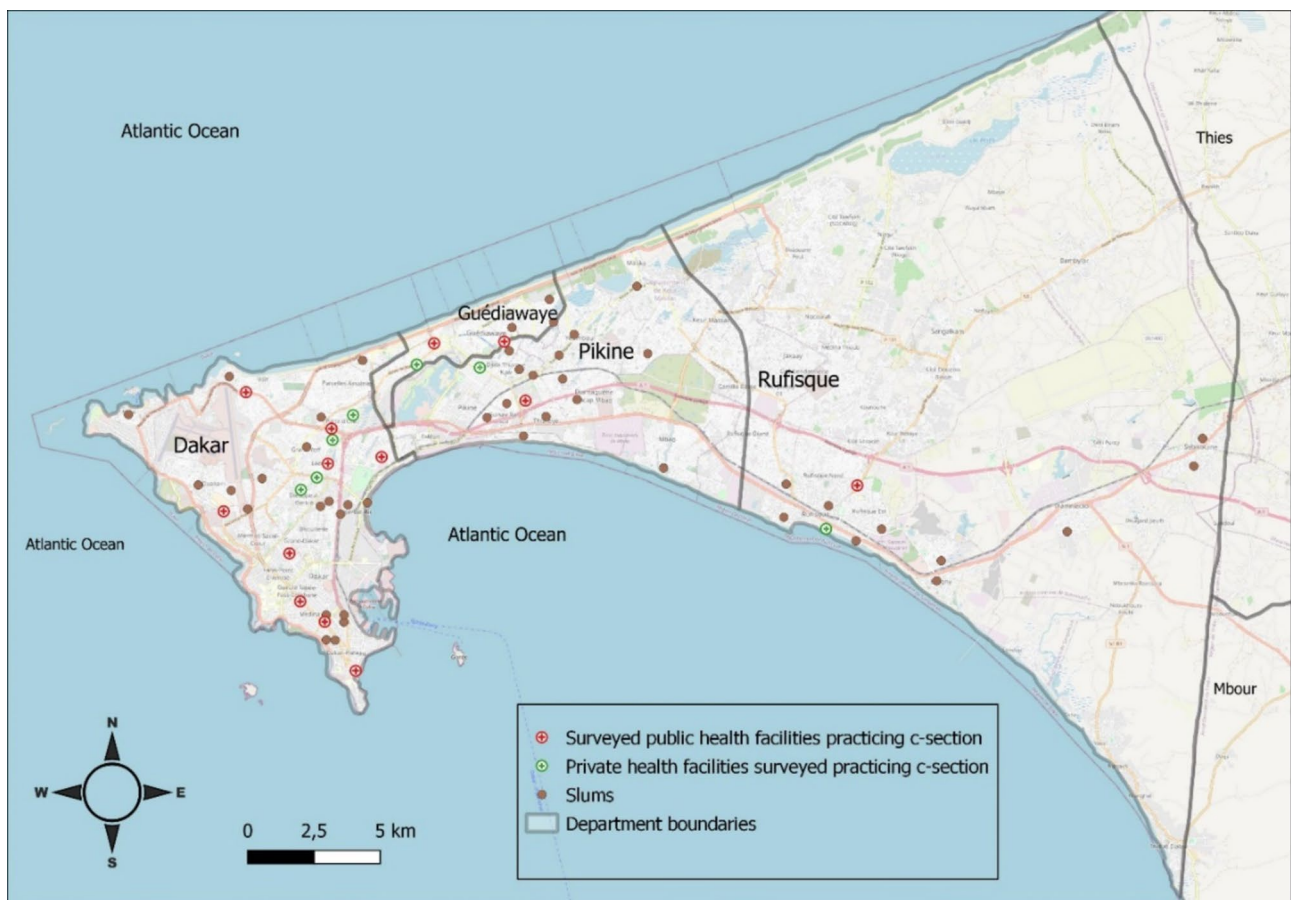


Fig. 1 Distribution of public and private health facilities surveyed (source: authors)

2.3 Data analysis

Descriptive and bivariate analyses were performed. The first data set shows the socio-demographic and economic characteristics of the women surveyed and their households, the costs of cesarean sections and how they are paid. The second involved an analysis of variance (ANOVA) to show the relationships between caesarean section costs according to type of health facility and department.

2.3.1 Poverty analysis

Poverty was analyzed at two levels: the standard calculation used by the Demographic Health Surveys (DHS) [29] and the Harmonized Survey on Household Living Conditions (EHCVM) [30]. The second level is a subjective measure of poverty. The method is well known and documented [30]. Part of this method involves asking households whether their income enables them to meet their basic needs. These needs include food, water, health care and housing. These different levels of analysis of poverty are relevant because they give us the opportunity to compare wealth perceptions with wealth as determined by the asset index and self-reported consumption. The cross-interpretation of the findings enabled us to identify underprivileged households who live in slums more accurately.

2.3.2 Spatial analysis

Mapping the results was crucial to highlight the spatial disparities in cesarean section costs reported by health facility heads and women who underwent the procedure. However, creating the maps presented challenges, particularly in the

case of Keur Massar, which became a department in 2021 (decree 2021-687) after splitting from the Pikine department, leaving its official boundaries unclear. To address this, we used the shapefiles of the former Pikine department (including Keur Massar) when generating the maps. As a result, data from women residing in both Pikine and Keur Massar were combined in Fig. 2a, b, representing the entire Pikine department.

All maps in this study were created using Quantum GIS 3.28.3 software and illustrate the spatial distribution of data collected through our field surveys. The OpenStreetMap (OSM) platform was used as the base layer for Fig. 1.

3 Results

3.1 Characteristics of the women surveyed

Table 1 shows that the average age of the women surveyed is 31 years, and they generally have a low level of education. A significant proportion had not attended formal education (21%), or had only completed primary school (39%). A large portion of respondents (45%) are housewives, with no involvement in economic activities. Approximately 28% engage in independent professions, often in informal trade, while 5% are students. Finally, 9.6% are employed in the private sector and 3% work for the state.

Results show that 75% of the women surveyed have their husband as head of the household, while only 2% of the women themselves hold this role. Among the heads of households (both male and female), 43% are involved in commerce, while a smaller proportion are drivers (5.4%) or unemployed/housewives (4.6%). On average, households consist of 10 members.

3.1.1 Economic situation of the households of the cesarean women surveyed

The analysis of households in Dakar's slums where women underwent cesarean sections aimed to assess whether they belonged to impoverished groups. Table 2 provides insight into their economic status.

Disparities emerge in monthly consumption expenditure: 41% of households spend less than 200,000 FCFA (327 USD), while only 1.5% spend over 600,000 FCFA (982 USD). Most households (52%) spend between 200,000 and 400,000 FCFA (327–654 USD). For 75% of households, financial resources are insufficient to cover basic needs, with 38% barely managing and 35% unable to do so. Only 8.5% perceive themselves as wealthy.

These results regarding the socio-demographic characteristics of women and their households highlight a significant incidence of poverty in the slums of Dakar. However, it is notable that even in these impoverished areas, there could be pockets of wealth.

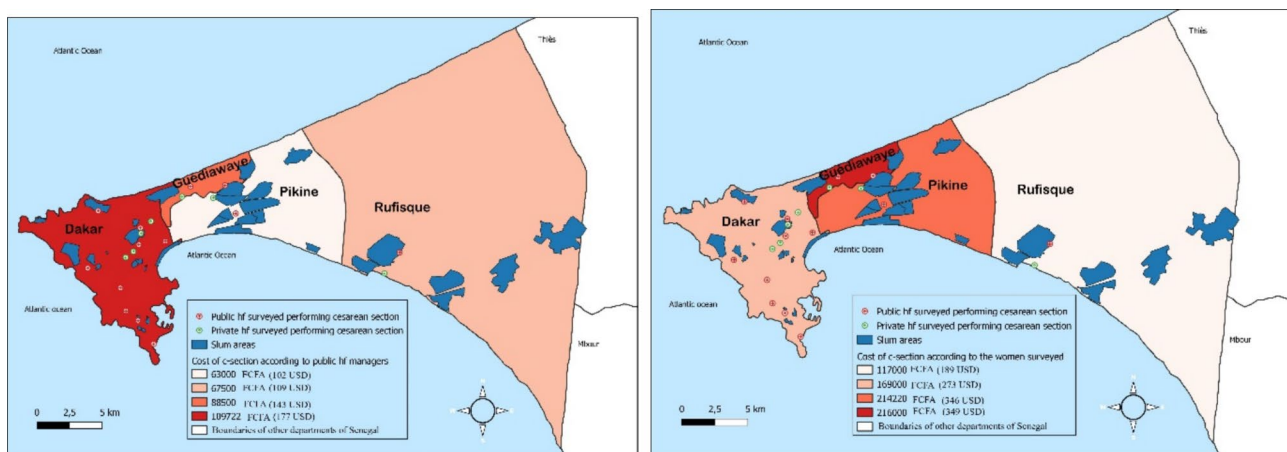


Fig. 2 Cost of cesarean section assessed at different levels: a cost underestimated by health facility managers? (source: authors). **a** Cost of cesarean section according to managers of public health facilities surveyed. **b** Cost of cesarean section according to the women surveyed

Table 1 Characteristics of the Cesarean women surveyed

Characteristic	Dakar, N = 118	Guédiawaye, N = 29	Keur Massar, N = 24	Pikine, N = 62	Rufisque, N = 27	All, N = 260
Mean age	31 (6)	30 (4)	30 (5)	31 (6)	31 (7)	31 (6)
Educational level						
Unschooler	20	21	17	21	30	21
Primary	33	48	50	40	41	39
Secondary	27	17	17	26	15	23
University	19	14	17	13	15	17
Religion						
Islam	94	97	100	92	100	95
Christianity	5.9	3.4	0	8.1	0	5.0
Ethnic group						
Wolof	35	34	50	40	63	40
Serere	24	0	8.3	19	15	18
Poular	24	34	25	24	15	24
Others	18	31	17	16	7.4	18
Marital status						
Monogamous bride	76	76	79	84	85	79
Married with co-wife(s)	20	24	21	16	15	19
Single	3.4	0	0	0	0	1.5
Occupation						
Household	39	38	54	52	59	45
State worker	1.7	0	4.2	3.2	11	3.1
Employed in the private sector	11	6.9	17	9.7	0	9.6
Independent	25	45	25	29	26	28
Pupil/Student	9.3	3.4	0	0	3.7	5.0
Other	14	6.9	0	6.5	0	8.8
Relationship to the head of household (CM)						
I am the head of the household	3.4	0	0	1.6	0	1.9
It is my husband	81	76	88	65	59	75
He is a close relative	11	14	8.3	27	33	17
Others	4.2	10	4.2	6.5	7.4	5.8
Profession of the CM						
Official	7.6	6.9	4.2	9.7	7.4	7.7
Breeder/Fisherman/Trader	39	45	58	47	41	43
Others	30	21	8.3	15	33	23
Private sector employee	15	10	25	18	7.4	15
Carrier	7.6	14	4.2	0	0	5.4
Unemployed/Housewife	0.8	3.4	0	11	11	4.6
Average household size	9	12	11	10	12	10

3.2 Financial accessibility of cesarean section

3.2.1 Cost of cesarean section according to health facility managers (public/private)

The policy of free cesarean section applies only to public health facilities, not private ones. However, even in the public sector, CS services are not totally free. This policy covers only the cost of the procedure and/or the cesarean section kit. Patients are still required to pay for consultation fees, prescriptions, hospitalization, and sometimes other

Table 2 Economic situation of the households of Cesarean women in the slums of Dakar

Items	Dakar N = 118 (%)	Guédiawaye, N = 29 %	Keur Massar N = 24 %	Pikine, N = 62 %	Rufisque, N = 27 %	All, N = 260 %
Estimated monthly expenses						
<i>Less than 200,000 (FCFA)</i>	48	21	29	37	48	41
<i>Between 200,000 and 400,000 (FCFA)</i>	48	69	58	52	48	52
<i>Between 400,000 and 600,000 (FCFA)</i>	2.5	10	8.3	8.1	3.7	5.4
<i>600,000 and more (FCFA)</i>	0.8	0	4.2	3.2	0	1.5
Average monthly health spending	90,397	69,282	28,898	33,618	38,781	63,465
Satisfaction with basic needs						
<i>Yes it is enough</i>	27	34	8.3	31	3.7	25
<i>Yes but barely</i>	38	31	29	40	48	38
<i>No it's not enough</i>	35	34	62	29	48	37
Wealth status perception						
<i>Poor</i>	42	28	33	48	19	38
<i>Average</i>	53	55	62	40	74	53
<i>Rich</i>	5.9	17	4.2	11	7.4	8.5

related expenses. The average total cost of a cesarean section varies significantly depending on the type of facility: it is lower at health centers (65000 FCFA/106 USD) and district hospitals (95833 FCFA/157 USD), but remains high at national hospitals, reaching up to 191250 FCFA (313 USD). Variations in average costs within each type of facility, as shown in Table 3, indicate significant differences in expenses. This result is confirmed by the ANOVA, which shows a clear difference (Supplementary Table 5) in the cost of cesarean section between public hospitals and health centers ($P = 0.0400$). In private clinics, the cost is much higher, averaging 630000 FCFA (1031 USD).

The results show that the high cost of CS services in public facilities is primarily due to the kit fee (60,200 FCFA/98 USD) and daily hospitalization costs (24,461 FCFA/40 USD). In private clinics, these expenses rise significantly, with the kit costing up to 162,399 FCFA (266 USD) and hospitalization reaching 49,200 FCFA (80 USD) per day. Women typically spend an average of 3 days in the hospital post-surgery. For those with complications, hospitalization can account for over 70% of the total procedure cost, making it a heavy financial burden.

3.2.2 Cost of cesarean section according to women experienced CS in public health facilities

The amount women paid for cesarean sections varied depending on their district of residence and the type of health facility where the procedure was performed. The results indicate that the average cost of cesarean section, as reported by respondents, is 180101 FCFA (296 USD) (Table 4).

The cost of CS services is higher for women in Pikine (225496 FCFA/371 USD) and Guédiawaye (216000 FCFA/354 USD). Most women in these areas had the procedure in public hospitals (92% in Guédiawaye and 80% in Pikine). Guédiawaye also recorded the highest proportion of women (80.8%) who found the cost to be high. In Dakar, where several health centers offer cesarean sections, the cost is relatively lower (169000 FCFA/278 USD). The results of the ANOVA (Supplementary Table 6) confirm the strong variation in the cost of caesarean section according to the departments in the Dakar region ($P = 0.0000$).

Households used 12 different methods to pay for the procedure (Table 4). In 80.42% of cases, the husband (71.67%), the woman (2.08%), or both (6.67%) paid without external assistance. When help was received, it usually supplemented the husband's contribution, often coming from relatives (7.08%) or health insurance (4.17%). Only 1.25% had full insurance coverage.

To verify the differences observed in the costs of cesarean section mentioned by those in charge of health facilities and women who experienced cesarean section, a spatial distribution of these costs was pondered, focusing only on public health facilities where the free policy applies (Fig. 2). On the one hand, it is noticed that in Fig. 2.a according to health facility managers, cesarean section is higher in the Dakar department (109722 FCFA/179 USD) and lower in the Pikine department (63000 FCFA/ 103 USD). The opposite is, however, observed in Fig. 2.b, which discloses that according to

Table 3 Average cost of cesarean section by type of health facility

Variables	Mean	Std. Err
Overall average cost of cesarean section (FCFA)		
National hospital/maternity	191,250	55,942.79
District Hospital	95,833	48,311.78
Health center	65,000	21,350.25
Private clinic	630,000	93,005.38
Ticket cost (FCFA)		
National hospital/maternity	5250	1282.9
District Hospital	3667	1333.33
Health center	2000	577.35
Private clinic	13,200	1319.21
Cost of the kit (FCFA)		
National hospital/maternity	24,683	7954.99
District Hospital	18,333	18,333.33
Health center	17,125	9785.99
Private clinic	162,399	159,410.5
Cost of prescriptions (FCFA)		
National hospital/maternity	38,850	12,073.6
District Hospital	33,333	4409.59
Health center	16,250	1652.02
Private clinic	2399	1912.99
Hospitalization cost (FCFA)		
National hospital/maternity	23,467	10,599.58
District Hospital	10,000	10,000
Health center	5875	3642.201
Private clinic	49,200	31,955.42
Other costs (FCFA)		
National hospital/maternity	61,700	45,656.76
District Hospital	29,833	18,952.43
Health center	23,750	8984.94
Private clinic	2399	1912.99

surveyed women, cesarean section is more expensive in the most populated departments of the Dakar suburbs, namely Guédiawaye (216000 FCFA/353 USD) and Pikine (Keur Massar including) (214220 FCFA/350 USD). These costs associated with accessing cesarean section are concerning particularly considering the policy of providing free cesarean sections is still in effect in Senegal. It has also been noted that these costs are underestimated by those in charge of health facilities who completely seem to ignore other additional costs borne by women, their husbands and their families.

4 Discussion

Poor women and their husbands continue to bear heavy charges for cesarean section. These costs vary depending on the health facilities and can sometimes be exorbitant even in eligible public hospitals, expected to apply the free policy. Consequently, women living in departments where a cesarean section is performed in public hospitals incur higher costs than those living in departments where there is a good network of health centers capable of performing this obstetric procedure. In Pikine and Guédiawaye, cesarean section is performed in national hospitals, which are the most expensive CS facilities after private clinics, as seen in Table 3.

Initially, the policy reimbursed regional hospitals 55,000 CFA (US\$110) per procedure, covering surgery and hospitalization [9]. District hospitals received subsidies in the form of kits. However, shortages led patients to buy their own medications while hospitals still charged the State [11]. This discrepancy creates a profit opportunity for hospitals, as

Table 4 Cost paid by women to access an emergency cesarean section

Features	Dakar. N=114	Guédiawaye. N=26	Keur Massar. N=23	Pikine. N=50	Rufisque. N=27	All. N=240
How much do you estimate the overall cost of cesarean section?	169,000	216,000	171,080	225,496	116,277	180,101
How do you judge these costs?						
High	68.5	80.8	78.3	76	78	72
Average	31.6	15.4	17.4	20	22	25
Low	2.6	3.8	4.3	4	0	3
Type of health facility						
Public hospital	56	92	100	80	96	74
Health center	44	8	0	20	4	26
Who paid this cost						
Person/structure who paid						
1. The woman	2.63	3.85	0.00	2.00	0.00	2.08
2. The woman & the husband	8.77	3.85	4.35	6.00	3.70	6.67
3. The woman & the husband & parent	0.88	0.00	0.00	0.00	0.00	0.42
4. The woman & the husband & other	0.88	0.00	0.00	0.00	0.00	0.42
5. The woman & parent	0.88	0.00	0.00	0.00	0.00	0.42
6. The husband	78.07	50.00	47.83	74.00	81.48	71.67
7. The husband & health insurance	2.63	7.69	0.00	6.00	7.41	4.17
8. The husband & parent	1.75	23.08	21.74	6.00	3.70	7.08
9. The husband & other	1.75	11.54	0.00	4.00	3.70	3.33
10. Health insurance	0.00	0.00	13.04	0.00	0.00	1.25
11. Parent	0.00	0.00	4.35	0.00	0.00	0.42
12. Other	1.75	0.00	8.70	2.00	0.00	2.08

the reimbursement exceeds the actual cost. According to Witter et al. [8] the surplus can reach 40,000 CFA (US\$61), while other costs are borne by patients.

Our findings show that while kits were available, many facilities did not provide them for free. Patients had to purchase kits or reimburse the cost later. Other costs, such as hospitalization, consultation fees, and medications, were also borne by the patients. The Universal Health Coverage Agency still promotes free cesarean sections on its platform, yet the actual costs have risen from 55,000 CFA to 85,000 CFA (US\$140) between 2011 and 2024. This increase covers the surgical procedure, pre-operative assessments, a hospital stay of up to five days, and necessary medications. However, our study indicates that only the surgical procedure is truly free, while other costs remain, making cesarean sections unaffordable for many.

Previous studies have highlighted confusion around the policy's implementation [10]. While some women reported no benefits, others paid for all medications except the cesarean [9]. A minority received full coverage, often due to private insurance. Compared to Ghana, the cesarean section costs in Senegal have not significantly decreased, as patients continue to pay for items supposedly covered by the policy, such as gloves and accommodation, as well as excluded costs like transport [8].

Delays in State reimbursements force facilities to charge patients for materials like kits to avoid shortages and staff demotivation. Health facility managers are often unaware of the full extent of costs incurred by patients, especially in densely populated areas like Guédiawaye and Pikine. This finding corroborates previous studies [6], [10] highlighting the inadequacies of the free cesarean policy.

Similar issues are observed in other West African countries [31]. In Benin, costs increased post-policy implementation [32]; in Mali, the quality of care declined [33]; and in Burkina Faso, there was an increase in unnecessary cesarean sections [34]. In Dakar, the financial profitability of cesarean section for public health facilities could lead to instances of abusive cesarean section, as mentioned by Niang and al. [13]. An unnecessary cesarean section poses an unnecessary risk [35–38], and can harm both the mother and child [39].

In Dakar, the policy resembles more of a subsidy than a true free service, as costs are still three times lower in public facilities compared to private clinics. However, most households struggle to afford these costs, pushing many into poverty. Dumont [6] found similar results in Mali, where cesarean-related expenses led to extreme poverty, school dropouts, and child malnutrition. Ensor and Ronoh [40] also reported precarious situations for households burdened with high maternal care costs.

Our study did not explore cases of abusive cesarean sections, which is a limitation. It also lacks data on the economic impact of emergency cesarean sections on low-income households and excludes well-off women who experienced cesarean sections, as well as those who required but could not access the service.

5 Conclusion

Despite the State's policy of providing free cesarean sections in public health facilities, many women living in Dakar's slums still face significant out-of-pocket expenses due to delays in government reimbursements to these facilities. This raises critical concerns about whether these costs are met at the expense of other basic necessities like food and rent.

If women in the capital, even with access to the best-equipped health facilities, struggle to benefit from this policy, the situation is likely far worse in other cities and, particularly, in remote rural areas. A comprehensive nationwide study is needed to shed light on the true financial burden of emergency cesarean sections on poor women across Senegal, despite the so-called "free" policy.

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Author contributions Sylla E.H.M., designed and carried out the data collection in the field, made substantial contributions to the design and interpretation of the data and drafted the paper. Fall N.A. participated in the drafting of the manuscript. Sandie A.B and Bocoum F.Y. made substantial contributions to the design and interpretation of the data. Senghor D.B., Gueye B.S., Cissé B.S.Y I., Faye C.M., were also involved in revising the manuscript critically for important intellectual content. All authors read and approved the final manuscript.

Data availability Data used in this study are available on a reasonable request to the corresponding author.

Declarations

Ethics approval and consent to participate All procedures performed in this study involving human clinical data were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. The Senegal's National Health Research Ethics Committee (CNER) has approved this study.

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

Competing interests The authors declare no competing interests.

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