

Research Article

Fee Variability and Equity in Primary Health Care Facilities in Benin, 2025

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Abstract

Introduction: In Benin, where out-of-pocket payment constitutes the primary healthcare financing mechanism, the fee-setting practices of First Contact Health Facilities (FCHFs) directly condition financial access to care for the population. This study aims to document the regulatory framework and pricing practices in Beninese FCHFs and to analyse their relationships with the socio-economic characteristics of health districts. **Methods:** A descriptive and analytical cross-sectional study was conducted in 2025 using fee schedules from 28 of the 34 health districts. Four categories of services were analysed: clinical and technical procedures (n=59), biological laboratory investigations (n=74), medical imaging examinations (n=4), and specialist procedures (n=17, Cotonou only). Tariffs were stratified by area type (urban/rural) and triangulated with departmental poverty rates, FCHF attendance rates, and the share of community-based financing. A Pearson correlation coefficient was calculated between poverty and fee levels. **Results:** No legal instrument governed FCHF fee-setting. Childbirth exhibited the highest dispersion (CV=94.46%; range: 885–15,000 FCFA). The mean fee for a medical consultation was 1,571 ± 535 FCFA in urban areas versus 1,118 ± 402 FCFA in rural areas, a differential of 40.5%. Certain highly impoverished rural districts maintained fees above the national average. A moderate but statistically significant negative correlation was observed between the departmental poverty rate and the medical consultation fee ($r=-0.651$; $p=0.001$). Own revenues of FCHFs accounted for 97.4% of their resources. **Conclusion:** Fee-setting in Beninese FCHFs relies on informal mechanisms that generate inequities in access to care. The ongoing reforms in the health sector represent an opportunity to establish equitable fee schedules, grounded in the socio-economic realities of the population, the principles of primary health care, and coupled with social protection mechanisms for vulnerable households.

Keywords

Healthcare Pricing, FCHF, Health Equity, Health District, Benin, Community-based Financing, Universal Health Coverage

1. Introduction

In low-resource countries, financial access to primary health care remains a structural determinant of health inequalities [1]. The

World Health Organisation and the World Bank estimate that approximately 4.5 billion people lacked full coverage for essential

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health services in 2021 due to financial barriers, underscoring the centrality of fee-setting in the dynamics of access to care [1]. In Benin, where the national poverty rate stood at 36.2% in 2021–2022 [2], this challenge takes on a particular dimension. With health insurance coverage still in its infancy, out-of-pocket payment remains the primary health care financing mechanism for the majority of households [3]. Within the framework of SDG 3.8, Universal Health Coverage (UHC) aims to guarantee everyone access to essential services without incurring financial hardship [1] — an imperative that is especially critical in lower-middle-income countries such as Benin.

First Contact Health Facilities (FCHFs), which occupy the first tier of the health pyramid and provide essential care to the vast majority of the population, constitute the primary entry point into the health system [4]. The fee-setting policy applied at this level directly affects attendance rates and service utilisation, with immediate repercussions on morbidity and mortality indicators, particularly with regard to maternal and child health [5].

Despite their strategic role, the pricing of services at the FCHF level receives little national regulatory attention in Africa, and especially in Benin. Apart from health products, whose tariffs regularly attract policymakers' attention, no updated, nationally binding fee schedule or reference framework is available in Benin for clinical and technical procedures. In most sub-Saharan African countries, this gap generates significant heterogeneity in the fees charged across areas, often uncorrelated with production costs or with households' ability to pay [6]. In Benin, where geographical diversity and economic disparities persist, few studies have examined the fee-setting system and the risk of financial exclusion from care [7, 8].

Faced with this situation, the recent commitment by the Ministry of Health of Benin to a national harmonisation of fee-setting practices [9] appears ambitious, albeit constrained by a lack of evidence. This interest, which creates an opportunity to build new approaches aimed at strengthening equitable access to care and ensuring the financial viability of health facilities, ought to be supported by the mobilisation of robust, structured, endogenous and scientific knowledge. It is within this context that the present study is situated, aiming to: (i) document the regulatory framework and fee-setting practices in FCHFs in Benin and (ii) analyse their relationships with the economic and financial characteristics of populations and health districts. To the best of our knowledge, this study constitutes the first systematic national documentation of service fee-setting practices in public health facilities in Benin, thereby providing an evidence base commensurate with the ongoing tariff reform process.

2. Methods

2.1. Study Setting

Benin is a West African country covering 114,760 km², with

a population estimated at approximately 13.5 million inhabitants in 2022, distributed across 12 departments and 77 communes [2]. Classified as a lower-middle-income country, its gross domestic product per capita was USD 1,265 in 2022 [10]. The economy remains predominantly informal and agricultural, with pronounced socio-economic disparities between the urbanised south — notably the Littoral department (Cotonou) — and the predominantly rural northern departments.

The health system is organised into three tiers according to the health pyramid: (i) the peripheral level, comprising First Contact Health Facilities (FCHFs) and district hospitals; (ii) the intermediate level, consisting of departmental hospital centres; and (iii) the central level, encompassing national hospital centres, whether university-affiliated or not. FCHFs — namely health centres, health posts, infirmaries, and maternity units — which serve as the first point of contact between the population and the health system, provide preventive, promotional, basic curative, and palliative care. They are distributed across the 34 health districts, each managed by a District Health Management Team (DHMT). The districts are placed under the supervision of the Departmental Directorates of Health.

Following the implementation of the Bamako Initiative, all FCHFs operate under a cost-recovery system. Their financing relies essentially on direct fee-for-service payments, with health insurance coverage estimated at approximately 8.4% of the population [3, 11]. Targeted exemption policies exist — notably for the management of malaria in children under five years of age and certain antenatal care services, vaccination, and the control of certain diseases — but their reach remains limited [12, 13].

2.2. Conceptual Framework and Study Design

This was a descriptive and analytical cross-sectional study, conducted at the national level in 2025. It drew upon an analytical framework structured around three axes: (i) documentary review and interviews regarding the regulatory, procedural and institutional framework; (ii) statistical review of fee-setting data; and (iii) triangulation of these data with contextual economic, financial, and health service utilisation data. This study is grounded in welfare economics applied to health, drawing on Grossman's model of the demand for health [14] and user fee theory [6, 15]. It tests the hypothesis that, in the absence of fee regulation, prices systematically diverge from households' ability to pay, thereby compromising equity of access.

2.3. Study Population, Sampling, and Selection Criteria

The study population comprised all public FCHFs in Benin, organised within 34 health districts covering the 12 departments of the country. The unit of observation was the health district, considered as the administrative unit of fee-setting decision-making.

Sampling was exhaustive (census-based). Of the 34 health districts nationwide, 28 that possessed a valid price list or fee schedule covering at least three categories of services in 2025 were systematically included. Districts whose price lists were incomplete were not enrolled. Semi-structured interviews were also conducted with ten (10) district medical coordinators to explore the regulatory framework and practices relating to fee-setting and tariff revision in FCHFs.

In accordance with the binary urban/rural classification of the 4th General Population and Housing Census (RGPH4) of 2013, published by the National Institute of Statistics and Demography (INStAD), health districts were classified into two categories: (i) urban districts (7 districts within the two departments of Littoral and Ou é n é); (ii) rural districts (21 districts within the ten remaining departments: Alibori, Atacora, Borgou, Donga, Collines, Zou, Couffo, Mono, Plateau, and Atlantique) [16].

2.4. Data Sources

Fee data were collected between August and December 2025 from the health districts. The compilation file established to bring together all these primary data and facilitate the analysis of the fee schedules from the 28 health districts distinguished four categories of services: clinical and technical procedures (59 procedures), biological laboratory investigations (74 procedures), medical imaging examinations (4 procedures), and specialist procedures (17 procedures, from Cotonou districts only).

Contextual data were derived from: (i) the 2024 Health Statistics Yearbook (HSY) of the Ministry of Health of Benin for attendance rate indicators and community-based financing by health district; (ii) the Harmonised Survey on Living Conditions of Households (EHCVM 2021–2022) by INStAD for poverty rates by department; (iii) World Bank and Afrobarometer statistics for the lived poverty profile at the departmental level [2, 7, 10, 17].

2.5. Study Variables

The primary variable was the fee charged (in FCFA; 1 USD \approx 600 FCFA) per procedure and per health district. Stratification variables included geographical area, category of service, time of day, and department. Contextual variables included the departmental poverty rate and FCHF attendance rate, as well as the share of community-based financing in the health district's resources. For each health district, this share was calculated by dividing the own revenues of FCHFs by the total FCHF revenues, including government-delegated credits. Funding from development partners was not included in this calculation.

2.6. Statistical Analysis

For each procedure and category of service, the following descriptive statistics were calculated: minimum fee, maximum fee, arithmetic mean \pm standard deviation, median with

quartiles Q1 and Q3, and coefficient of variation (CV). The CV was used as an indicator of dispersion across districts. A CV < 30% indicated relative homogeneity; a CV between 30% and 50% indicated moderate variability; and a CV > 50% indicated high heterogeneity. All analyses were conducted using Stata 14. The Pearson correlation coefficient (r) between the departmental poverty rate and the medical consultation fee per health district was calculated. As the poverty rate was available only at the departmental level, it was assigned to each district according to its department of affiliation; this is therefore an ecological correlation, the interpretation of which must take this level of aggregation into account.

2.7. Ethical and Administrative Considerations

The study was conducted in accordance with the research reference framework of the National Ethics Committee for Health Research (CNERS) of Benin. It relied primarily on primary administrative data and aggregated secondary data collected from public sources. Data from semi-structured interviews were obtained with the informed consent of participants. The principles of confidentiality and anonymity, as well as deontological and administrative rules, were observed.

3. Results

3.1. Regulatory Framework and Fee-setting Practices in FCHFs in Benin

3.1.1. Legislative and Regulatory Foundations

In Benin, the pricing of services in public health facilities is embedded within an overarching regulatory framework anchored in the fundamental law, which enshrines the right to health [18]. To date, the fee-setting of public FCHFs has not been the subject of any specific legal instrument. The oldest regulatory anchor dates back to the Bamako Initiative (1987). This legal framework, limited to medicines, does not cover clinical and technical procedures. For such procedures, two general legislative texts apply only indirectly: Law No. 97-020 of 17 June 1997, which confers upon the Ministry of Health the authority to set tariffs in private health facilities [19]; and Law No. 2020-37 of 3 February 2021 on the protection of persons' health, which, by establishing the principles of the right to health and equitable access to care, places the State in the role of guarantor of affordable tariff conditions for the population in accessing health facilities [20].

Beyond the legal instruments governing the establishment and functioning of health facilities, certain specific texts contribute to the regulation of service fee-setting. These include Decree No. 88-444 of 18 November 1988, which assigned health centre management committees (COGECs) a role in setting the margins on the supply of health services [21]. Law No. 2021-03 of 1 February 2021 on the regulation of pharma-

ceutical activities, whilst not explicitly addressing the procedure for setting service fees, could nonetheless influence them, as it assigns the responsibility for setting the prices of health products to the pharmaceutical sector regulatory body [22]. Decree No. 96-25 of 23 January 1996 addressed fee-setting in private pharmacies [23]. Furthermore, Decree No. 97-321 of 17 July 1997 provides for the coverage of care for indigent persons [24]. Thus, whilst the pricing of medical procedures remains largely unregulated at the national level, the supply of medicines benefits from a more structured legal framework, albeit one that is only partially implemented.

3.1.2. Process of Fee-setting and Tariff Revision

The process of setting and revising procedure fees in FCHFs is based on a local, participatory approach, conducted without any formal normative framework. No legislative, regulatory, or methodological guidance governs this process:

"Formally speaking, I would say no [...] It seems to be merely an adjustment made to the customary tariffs... Common sense has been our guide." (Male, south-eastern district).

The various reasons cited for initiating tariff revision relate to internal concerns — such as the introduction of new services, the need to increase revenues, or the need to cover fundamental operating costs including salaries of staff paid from own resources — as well as the desire to adapt to the district's environment: the wish to align with or approach the tariffs charged by neighbouring health districts, and the need to cover payroll costs.

"It is a departmental need [...] And furthermore, we also noticed that, compared with other facilities, we were charging rates that were significantly lower than those applied elsewhere [...] there were procedures that were not being billed [...] The third factor is also the impact on community financing where, given the attendance levels, revenues are not commensurate." (Male, southern district).

The process typically unfolds in several stages: an assessment of the prevailing fee structure within the District Health Management Team (DHMT), followed by the formation of a multidisciplinary ad hoc committee comprising nurses, midwives, laboratory technicians, accountants, and several health post in-charges. This committee establishes or updates the register of all procedures performed, estimates their costs by taking into account the inputs consumed, and conducts a comparative analysis with neighbouring districts.

"We take the fee schedule of surrounding health districts and departmental districts [...] and we see that, when compared with the schedules of other facilities, the average is roughly what is appropriate." (Male, northern district).

"We genuinely tried to carry out a review of the situation and to make projections. Taking into account the charges we had at that time, because there is staff paid from community financing, and many other things..." (Male, central district).

The proposal thus drawn up is first submitted for pre-validation by the DHMT, then presented to the District Health Committee, which serves as the district's steering and decision-making body. It is this committee — bringing together community representatives, members of health centre management committees, health workers, and members of the district health office — that proceeds to validate the fee schedule.

"So it was first to the District Health Management Team, which had drawn up the proposal, that we submitted it; then at the Health Committee meeting. The Health Committee proposed amendments, and it was only after that we validated it." (Male, northern district).

"It is the coordinating physician and the chairperson of the health committee who co-sign the letter on the new fee structure." (Male, central district).

The actors involved in this fee-setting process thus include the members of the DHMT, health post in-charges, communal accountants, members of health centre management committees, and, in some districts, actors from the Health Service User Platform (PUSS). The dissemination of the new tariffs is carried out by distributing the fee schedule to health facilities in sealed envelopes with a signed receipt, with a mandatory requirement to display it in the pharmacy, and sometimes through radio broadcasts.

"We arranged radio broadcasts to further inform the population; especially to explain that costs had been revised. It was really important..." (Male, central district).

Monitoring of implementation is the responsibility of the health post in-charge. Compliance with tariffs is verified during supervisory visits and routine inspections. In general, the actors emphasise that the process would benefit from stronger oversight by the central level, with clear standards and procedures, in order to reduce disparities across health districts and to ensure both the financial viability of health facilities and the affordability of care for the population.

3.2. Distribution and Statistics of Fees in FCHFs

The analysis of fee schedules from 28 health districts identified 154 procedures and investigations grouped into four categories: 59 clinical and technical procedures, 74 biological laboratory investigations, 4 medical imaging examinations, and 17 specialist procedures (performed exclusively in the Cotonou districts). The complete list of procedures, classified by category, is presented in the Appendix (Table 3).

3.2.1. Structure of Fee Schedules

The analysis covered the fee schedules of 28 health districts, encompassing a total of 154 procedures and investigations grouped into four categories. Figure 1 presents summary indicators of the fees — namely mean, median, and range (minimum–maximum) — for the most frequently performed clinical procedures in health districts. It illustrates fee differentials that could reach a ratio of 1: 17 for childbirth (885 to 15,000

FCFA) or 1: 4 for medical consultation (500 to 2,000 FCFA).

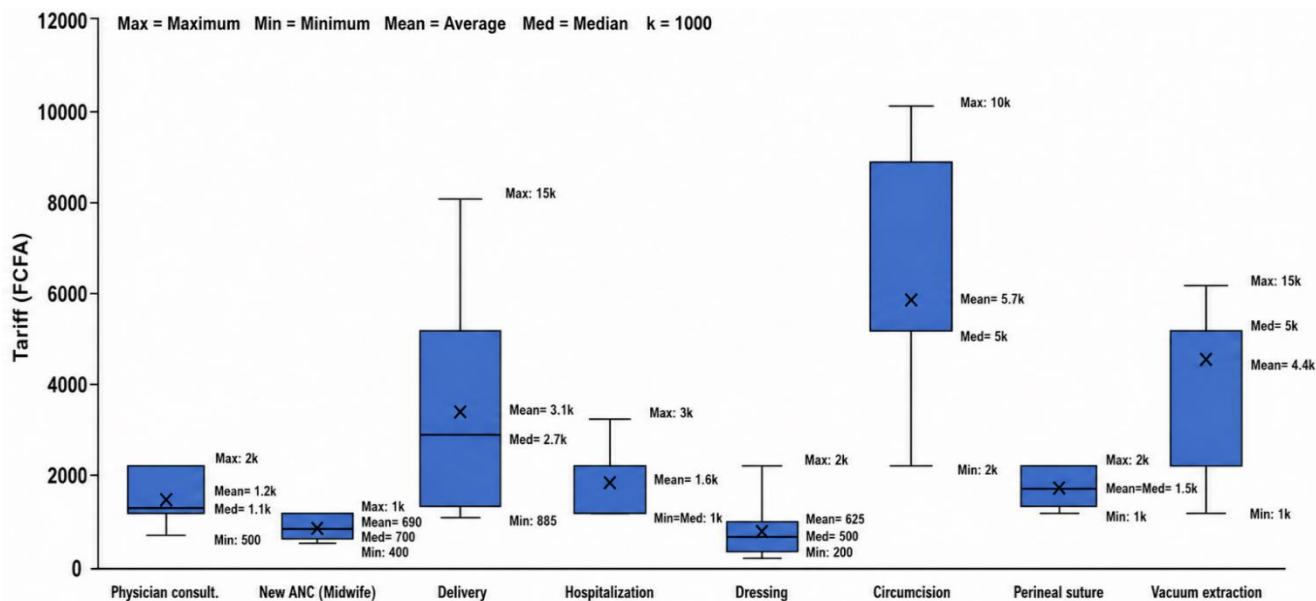


Figure 1. Central tendency and dispersion indicators of care fees in FCHFs in Benin, 2025.

The median fee for clinical procedures was driven by simple, frequently performed procedures such as the nursing consultation, blood pressure measurement, and outpatient care. Laboratory investigations exhibited higher mean fees (mean: 2,343 ± 1,494 FCFA; median: 2,000 FCFA [Q1=1,500;

Q3=3,000]), whilst medical imaging examinations showed the highest fees (mean: 6,177 ± 2,389 FCFA; median: 5,000 FCFA [Q1=5,000; Q3=7,000]). Specialist procedures had the highest fees across the entire schedule (mean: 7,500 ± 2,977 FCFA; median: 8,000 FCFA [Q1=5,000; Q3=10,000]).

Table 1. Descriptive statistics of fees by category of service in health districts of Benin, 2025 (n=28).

Category of service	Procedures (n)	Min. (FCFA)	Max. (FCFA)	Median [Q1; Q3] (FCFA)	Mean ± SD (FCFA)
Clinical and technical procedures	59	0	15,000	800 [300; 1,900]	1,450 ± 1,868
Biological laboratory investigations	74	0	15,000	2,000 [1,500; 3,000]	2,343 ± 1,494
Medical imaging examinations	4	4,000	12,000	5,000 [5,000; 7,000]	6,177 ± 2,389
TOTAL	154	0	15,000	1,800 [900; 2,500]	2,000 ± 1,950

3.2.2. Distribution of Fees According to Geographical Area

Geographical stratification reveals a fee gradient by area type, though without uniform consistency across all procedures. For medical consultation, the decreasing hierarchy is confirmed: 1,571 ± 535 FCFA in urban areas versus 1,118 ± 402 FCFA in rural areas. A differential of 40.5% is observed between the two area types, with a national mean of 1,235 ±

474 FCFA. For childbirth, the national mean was 3,192 ± 3,015 FCFA, with urban areas displaying a higher fee (3,329 ± 2,085 FCFA) compared with 3,147 ± 3,311 FCFA in rural areas — reflecting marked internal heterogeneity, particularly in rural areas, where districts with very low fees (ZS MK, ZS KGS: 1,000 FCFA; ZS PAS, ZS 3A, ZS ABD: 1,100 FCFA) coexist with districts charging considerably higher fees (ZS ATZ: 5,000 FCFA; ZS AS: 15,000 FCFA), yielding a ratio of 1: 15 between extremes. Figure 2 illustrates this distribution for six representative procedures.

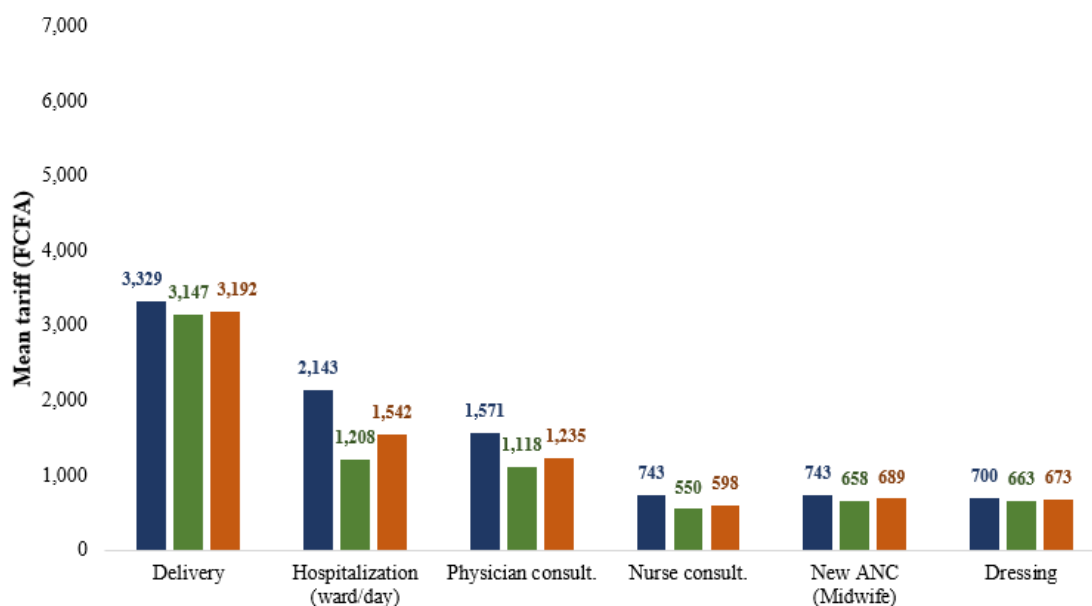


Figure 2. Distribution of fees by geographical area type in FCHFs in Benin, 2025.

3.2.3. Inter-district Dispersion – Analysis Using the Coefficient of Variation

The coefficient of variation (CV) measured fee heterogeneity independently of the fee level. It reveals that dispersion is not homogeneous across procedures (Figure 3). Medical consultation shows

a CV of 38.4% (moderate variability). Childbirth displays a CV of 94.46% (range: 885–15,000 FCFA), indicating high dispersion. Among procedures with high variability (CV > 50%), one also finds the suture of traumatic lesions (CV: 70.55%), wound dressing (CV: 63.81%), and ward hospitalisation (CV: 53.56%). Conversely, procedures such as perineal suture and the new antenatal care consultation display CVs of between 30% and 50%.

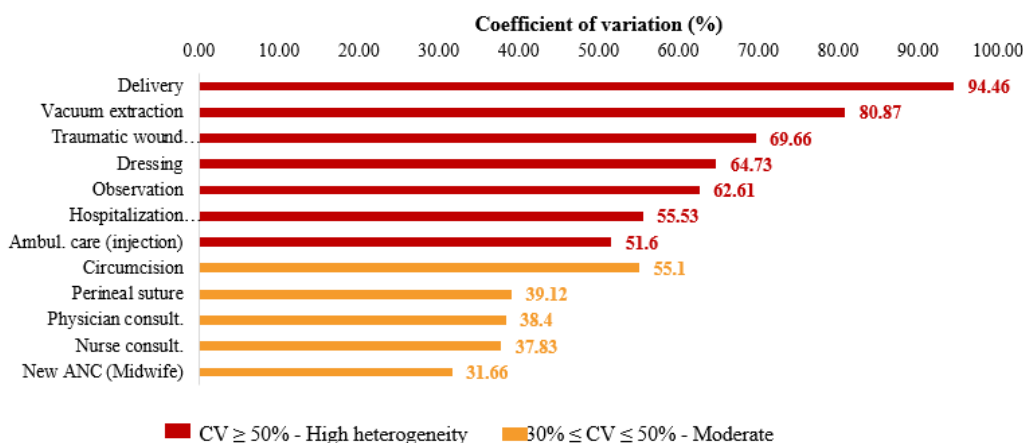


Figure 3. Coefficient of variation of fees for key clinical procedures in FCHFs in Benin, 2025.

3.2.4. Mapping of Applied Fees

Figure 4 provides a synoptic view of the entire fee structure through a heat map, enabling simultaneous visualisation of variations by procedure and by health district. The Cotonou districts (COT2&3, COT1&4, COT5, COT6) form a relatively homogeneous bloc of high fees. For obstetric ultrasound —

the procedure most comprehensively reported across all districts — the geographical gradient ranges from 7,000 FCFA in the four Cotonou districts, to 5,000 FCFA in the urban districts of Ouémé and the AS district (Atlantique), and 4,000 FCFA in the most remote rural districts (ZS KGS, ZS BNK, ZS NKP). The ZS MK district (Malanville-Karimama, Alibori) reported no fee for this procedure. Specialist procedures are available only in Cotonou, making any inter-district comparison impossible for this category.

HEALTH ZONES		CLINICAL AND TECHNICAL SERVICES (selected)				MEDICAL IMAGING				SPECIALISED SERVICES			
		Doctor consultation	Delivery	Antenatal care (first visit)	Wound dressing	Obstetric ultrasound	Pelvic ultrasound	Abdomino-pelvic ultrasound	Dental radiograph	Fundus examination	Wisdom tooth extraction	Stomatology consultation	Scaling (dental)
Urban zones	COT 2&3	2k	8k	1k	1k	7k	N/A	N/A	4k	3k	12k	3k	10k
	COT1&4	2k	8k	1k	1k	7k	N/A	N/A	4k	3k	12k	3k	10k
	COT5	2k	1.1k	1k	1k	7k	N/A	N/A	4k	3k	12k	3k	10k
	COT6	2k	1.1k	1k	1k	7k	N/A	N/A	N/A	3k	N/A	N/A	N/A
	PAS	1k	0.9k	0.4k	0.3k	5k	N/A	10k	N/A	--	--	--	--
	3A	1k	2k	0.4k	0.3k	5k	N/A	10k	N/A	--	--	--	--
Rural zones	ABD	1k	5k	0.4k	0.3k	5k	N/A	10k	N/A	--	--	--	--
	AS	2k	15k	0.8k	0.6k	5.5k	N/A	N/A	N/A	--	--	--	--
	OKT	1.2k	4k	0.7k	0.3k	N/A	N/A	N/A	N/A	--	--	--	--
	Sakif	1k	0	0.6k	0.5k	5k	8k	12k	N/A	--	--	--	--
	PAK	1.1k	8k	0.6k	0.5k	5k	8k	12k	N/A	--	--	--	--
	SABA	1k	2.5k	0.7k	0.5k	N/A	N/A	N/A	N/A	--	--	--	--
	SAO	2k	2k	0.5k	0.5k	N/A	N/A	N/A	N/A	--	--	--	--
	ATZ	1.4k	5k	0.8k	0.2k	5k	N/A	N/A	N/A	--	--	--	--
	ADD	0.8k	3k	0.5k	0.5k	N/A	N/A	N/A	N/A	--	--	--	--
	CBGH	1.3k	3k	0.8k	1k	N/A	N/A	N/A	N/A	--	--	--	--
	LA	N/A	2.5k	0.7k	0.5k	N/A	N/A	N/A	N/A	--	--	--	--
	COZO	1.4k	1.5k	0.5k	2k	N/A	N/A	N/A	N/A	--	--	--	--
	KTL	0.8k	3k	0.5k	0.5k	N/A	N/A	N/A	N/A	--	--	--	--
	MK	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	--	--	--	--
	KGS	1k	1k	N/A	0.3k	4k	N/A	N/A	N/A	--	--	--	--
	BNK	1k	1.5k	N/A	0.2k	4k	N/A	N/A	N/A	--	--	--	--
	TCH	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	--	--	--	--
	BASSILA	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	--	--	--	--
	TMC	1k	5k	N/A	0.5k	5k	5k	N/A	N/A	--	--	--	--
	NKP	0.75k	1k	N/A	0.3k	4k	5k	N/A	N/A	--	--	--	--
PN	0.6k	5k	N/A	1.5k	5k	4k	N/A	N/A	--	--	--	--	
BS	0.8k	5k	N/A	1k	5k	5k	N/A	N/A	--	--	--	--	

Price (thousand FCFA)	N/A / --	0	1	2	3	5	8	10	12	15+
	Increasing price →									

N/A : Not available
-- : Not offered

Note: Prices are expressed in thousands of CFA Francs (FCFA). The colour intensity reflects the level of price: the darker the red, the higher the price.

Figure 4. Mapping of fees applied by health district and by procedure in FCHFs in Benin, 2025.

3.3. Contextual Profile: Poverty, Attendance, and Community-based Financing

Data from the Harmonised Survey on Living Conditions of Households (EHCVM 2021–2022) by the National Institute of Statistics and Demography [2] and from Afrobarometer [7] reveal a pronounced North–South poverty gradient. The highest poverty rates concerned the northern departments (Alibori 44.7%, Atacora 53.1%, Borgou 47.7%, Donga 48.4%), intermediate levels characterised the Centre-West (Zou 41.4%, Mono 45.1%, Couffo 54.1%, Collines 22.1%), and the lowest rates were found in the South (Atlantique 23.9%, Ouémé 16.0%, Plateau 34.1%, Littoral 18.3%) [2]. In the North, a median daily income of less than 600 FCFA exposed households to the risk of catastrophic expenditure for primary care [25].

According to the 2024 Health Statistics Yearbook (HSY) of the Ministry of Health of Benin [17], the national health service attendance rate is 59.3%. Departmental disparities persist, with rates ranging from 28.6% in Plateau to 61.8% in Alibori,

67.6% in Littoral, and 79.1% in Borgou [17]. The national proportion of births assisted by skilled personnel was 96.7% among births recorded in health facilities; with, according to the National Health Information System (SNIGS) data, 96.1% in Alibori and 99.8% in Littoral [17].

With regard to community-based financing, the 2024 National Health Statistics Yearbook indicates that own revenues of FCHFs represent on average 97.4% of health district resources at the national level, with government-delegated credits covering only 2.6% of the total [17]. This predominance of direct patient financing was quasi-universal: ranging from 90.8% in Littoral to 98.4% in Atlantique and 98.2% in Borgou, with no notable difference between northern and southern departments. As government delegated funding remained marginal across all districts, any increase in fees was borne directly by households [17].

Table 2 presents, for each department and according to its predominant area type, the most recent data on monetary poverty, attendance levels, and the share of community-based financing in FCHF resources.

Table 2. Socio-sanitary profile of departments of Benin by area type (2024 data).

Department	Area type	Monetary poverty rate (%) [EHCVM 2022]	FCHF attendance rate (%) [HSY 2024]	Share of community-based financing (%) [HSY 2024]
Littoral	Urban	18.3	67.6	90.8
Atlantique	Rural	23.9	50.7	98.4
Ouémé	Urban	16.0	35.1	97.2
Mono	Rural	45.1	47.7	97.8
Couffo	Rural	54.1	40.6	97.8
Plateau	Rural	34.1	28.6	95.6
Collines	Rural	22.1	42.6	97.2
Zou	Rural	41.4	43.1	98.1
Borgou	Rural	47.7	79.1	98.2
Donga	Rural	48.4	56.5	96.3
Atacora	Rural	53.1	71.9	97.1
Alibori	Rural	44.7	61.8	98.0
Benin (national)	–	36.2	59.3	97.4

Source: INStAD (EHCVM 2021–2022) [2]; Ministry of Health of Benin (HSY 2024) [17]; Afrobarometer [7].

The ecological correlation between the poverty rate of the department of affiliation and the medical consultation fee in health districts reveals a statistically significant negative association (Pearson's $r = -0.651$; $p = 0.001$; Spearman's $\rho = -0.616$; $p = 0.002$; $n = 27$ districts). These results indicate that districts located in poorer departments tend to charge lower consultation fees.

4. Discussion

4.1. Tariff Heterogeneity of Services

The variations in fees charged in FCHFs from one district to another — with coefficients of variation reaching 94.46% for childbirth and 31.66% for the new antenatal care consultation — exceed the levels of variability documented in analyses of actual versus normative costs in Kenya. That analysis reported that the mean cost per capita for primary care ranged from USD 9.3 to USD 47.2 depending on the sub-region, indicating a marked inter-area differential in the absence of a national fee reference framework [26]. Lower variability, ranging from USD 2.33 to USD 4.89 depending on the province, was reported for outpatient consultation costs in health centres in Cambodia [27]. However, few African studies directly compare several public facilities for the same procedures or specifically examine the fees applied.

The interviews conducted with district medical coordinators in Benin shed light on the mechanisms underlying this fee heterogeneity. Indeed, in the absence of a national normative or regulatory framework, each district constructs and adjusts its fee schedule according to its own financing needs, without a thorough analysis of production costs, relying instead on historical precedent, local negotiations, a rough estimate of households' ability to pay, and even mimicry of neighbouring health districts. This form of local autonomy produces what Wagstaff and others describe as 'horizontal inequities': that is to say, at an identical quality of care, a patient in an urban area is required to pay two to three times more than a patient in a rural area, without this differential necessarily reflecting any difference in the cost of production [28, 29]. This logic of fee-schedule construction tends to reproduce existing disparities rather than correct them, consistent with lessons drawn from other African contexts [30, 31].

From an economic standpoint, this tariff heterogeneity — not grounded in unit production costs — constitutes a source of allocative inefficiency: when identical fees apply to procedures whose actual costs differ, resources are not directed towards the most socially beneficial procedures. It also signals productive inefficiency: a coefficient of variation of 94.46% for childbirth, at an assumed homogeneous quality in the public sector, indicates the strong influence of local ad hoc processes in fee-setting, to the detriment of cost optimisation. Activity-based costing appears to be a prerequisite for any rational fee-setting reform [32].

4.2. Urban-rural Fee Gradient and Geographical Inequities

Urban districts applied, on average, higher fees than rural districts (a differential of 40.5% for medical consultation, using rural districts as the reference). The urban–rural differentials, corroborated by the significant negative correlation ($r=-0.651$; $p=0.001$) between the departmental poverty rate and the medical consultation fee, are consistent with the urban–rural fee differential documented in other primary care settings in West Africa [6, 29]. They may be partially explained by higher operating costs in urban areas: rents, wages, and inflationary pressures. According to price elasticity of demand, this fee differential could affect access to care. Indeed, in low-income countries, negative price elasticities of between -0.1 and -0.5 are documented for primary care consultations [15, 33]. A differential of 40.5% between urban and rural areas could therefore induce a reduction in health-seeking behaviour estimated at between 4% and 20% among the most disadvantaged rural households, depending on the elasticity value assumed.

However, this adjustment remains insufficient to guarantee access to care. In the northern departments, where between 44.7% and 53.1% of the population live in poverty [2], even a fee of 600 to 800 FCFA may represent catastrophic expenditure relative to a household's daily budget, given that the median daily income is below 600 FCFA [25]. In these departments, a medical consultation billed at 1,000 FCFA would represent 1.7 days of median income. In a household of 5 persons — the average in Benin — where two members seek care per month, the monthly cost of consultations could reach between 15% and 20% of household income, thereby approaching the threshold of the SDG 3.8.2 indicator on financial protection against catastrophic health expenditure. On this subject, Knaul et al., in their analysis of Mexico's universal coverage reform, remind us that a low fee is not automatically equitable — if a household's capacity to pay is already exhausted by other non-discretionary expenditures, even a low fee may lead to foregone care [34].

Table 2 reveals two distinct departmental profiles. In the Littoral and Ouémé departments, households had higher incomes and faced higher fees. FCHF attendance was high in Littoral and low in Ouémé [2, 17]. In the rest of the country, households had low or very low incomes — particularly in the North (Alibori, Atacora, Borgou) — with highly variable FCHF attendance rates. These findings suggest that, from an operational standpoint, any tariff revision should be grounded in precise indicators — such as inflation, the minimum wage, FCHF attendance rates, and the proportion of assisted deliveries — which could be incorporated into an automatic indexation mechanism.

4.3. Fee-setting of Obstetric Services

Childbirth was the most variable procedure in the study. Its

fee ranged from 885 to 15,000 FCFA, with a coefficient of variation of 94.46%. This high dispersion is of concern, particularly in a context where United Nations agencies and the World Bank estimate that Benin records high maternal mortality — approximately 523 deaths per 100,000 live births in 2020 [5] — and where the cost of childbirth remains one of the primary and recurrent reasons why women deliver outside a health facility in sub-Saharan Africa [35]. This situation and its effects are particularly pronounced among women from disadvantaged backgrounds [35].

The coexistence, within this national system, of fees ranging from 885 to 15,000 FCFA for childbirth does not appear equitable, especially in the absence of evidence that this differential reflects a difference in quality. Drawing on successful experiences within the sub-region, measures to remove financial barriers — such as the free delivery policy in public facilities that achieved notable success in Senegal between 2004 and 2006 [36], or a similar targeted subsidy mechanism applied successfully in Mali [29] — could be considered. In sum, the regulation of fees for this service, combined with an exemption mechanism for indigent households or targeted waiver policies, appears unavoidable if the country is to advance towards universal health coverage.

4.4. Community-based Financing and Fee-setting

Excluding non-delegated credits — often provided in the form of in-kind contributions such as personnel, inputs, and equipment — own revenues of FCHFs represented on average 97.4% of their resources, compared with only 2.6% from government-delegated credits [17]. Under this model, inherited from the Bamako Initiative and resting on the direct financial participation of communities, any variation in fees has an immediate impact on households, which predominantly finance the operation of health facilities. The situation should be of particular concern in poorer districts, where the population's contribution to health facility budgets is estimated at 97%. Yet, impoverished districts — such as the COZO health district — charged high fees, equal to or exceeding the national average [2]; this would bring households in these districts close to catastrophic expenditure, since, according to Xu et al., health expenditure becomes catastrophic when it exceeds 40% of a household's capacity to pay [37].

As with the magnitude of expenditure, the mode of direct payment tends to deter health-seeking behaviour, particularly among the most disadvantaged populations [29]. This deterrence can be alleviated by health insurance, as illustrated by the experience of Ghana, where the introduction of the National Health Insurance Scheme significantly increased utilisation of formal health services [38]. These experiences underscore the necessary coupling of fee regulation with social protection mechanisms in order to achieve universal health coverage.

In sum, the findings of this study call for reforms structured

around three key policy levers: (i) the development of a national fee-setting framework for FCHFs; (ii) the accelerated scale-up of social protection mechanisms under the ARCH project, with particular focus on the most vulnerable households; and (iii) the establishment of a tariff monitoring system integrated within DHIS2, enabling periodically contextualised fee revisions.

4.5. Study Limitations and Implication

This study has several limitations. Six of the 34 health districts did not submit their fee schedules within the required timeframe, potentially introducing selection bias, as fee-setting practices in these districts may have specific characteristics. The contextual data used — which are essentially secondary data — do not all pertain to the same period or derive from the same source, and the methods of their collection may also differ [2, 17]. These discrepancies may reduce the precision of the observed associations, particularly in departments that experienced economic or social changes between 2019 and 2025. The study also relies on declared fee-setting practices that have not been cross-referenced against patients' actual experiences or revenues effectively received, which does not exclude the possibility of social desirability bias. Furthermore, risks of information bias persist — due to the limited use of actual cost data in tariff determination — as well as ecological bias (also known as the Robinson paradox), given that the ecological correlation is obtained by assigning, by default, the departmental poverty rate to the health district. To address this bias and determine whether households within the poorest districts face the highest fees, a household-level health expenditure study would be required to calculate a concentration index of expenditure.

5. Conclusion

This study reveals that, in Benin, the pricing of services in FCHFs rests on informal mechanisms, in the complete absence of any national regulatory framework. The observed tariff heterogeneity — with coefficients of variation reaching 94.46% for childbirth — reflects structural horizontal inequities in access to care that are difficult to justify on the basis of differences in production costs. The significant negative correlation between poverty rates and medical consultation fees ($r=-0.651$; $p=0.001$) attests to a partial sensitivity of local actors to households' ability to pay, yet one that is insufficient to guarantee equity — as evidenced by the situation in which impoverished districts charge fees above the national average. In a context where community-based financing represents 97.4% of FCHF resources, any tariff revision falls directly on households. The reform dynamics currently under way in the health sector represent an opportunity to establish equitable fee schedules, grounded in the actual production costs of care, the principles of primary health care, and the socio-economic re-

alities of the population, and coupled with the social protection mechanisms of the Assurance pour le Renforcement du Capital Humain (ARCH) project. As Benin pursues universal health coverage, this study also underscores the need for a tariff monitoring system through DHIS2 or SIGL, and for complementary research on actual cost calculation, price elasticity of demand, and the impact of fee-setting reform on access to care.

Abbreviations

ARCH	Assurance Pour le Renforcement du Capital Humain
CNERS	National Ethics Committee for Health Research
CV	Coefficient of Variation
DHMT	District Health Management Team
DHIS2	District Health Information Software 2
EHCVM	Harmonised Survey on Living Conditions of Households
FCHF	First Contact Health Facility
FCFA	Franc of Financial Community of Africa (1 USD \approx 600 FCFA)
HSY	Health Statistics Yearbook
INStaD	National Institute of Statistics and Demography
PUSS	Health Service User Platform
SDG	Sustainable Development Goal
SIGL	Logistics Management Information System
SNIGS	National Health Information System
UHC	Universal Health Coverage

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Data Availability Statement

The data supporting the findings of this study are available from the corresponding author upon reasonable request.

Conflicts of Interest

The authors declare no conflicts of interest.

Appendix

Table 3. Complete classification of procedures analysed in FCHFs in Benin (2025).

No.	Procedure Description	Category
1	Medical consultation	Clinical and technical procedures (n=59)
2	Specialist consultation	
3	Nursing consultation	
4	Curative midwife consultation	
5	Follow-up curative consultation	
6	New antenatal care consultation (midwife)	
7	Follow-up antenatal care consultation (midwife)	
8	Postnatal consultation	
9	Childbirth (delivery)	
10	Ventouse (vacuum extraction)	
11	Episiotomy	
12	Manual removal of placenta / home delivery	
13	Repair of soft-tissue lacerations without episiotomy	
14	Manual vacuum aspiration (MVA) / curettage	
15	Internal version manoeuvre	
16	Manual removal of placenta + uterine revision (DA+RU)	
17	Post-abortion care	
18	Ward hospitalisation (per day)	
19	Admission for observation	
20	Care and intravenous injections	
21	Care and intramuscular injections	
22	Outpatient care (injection)	
23	Insertion of intravenous line	
24	Catheter placement	
25	Transfusion procedure (accredited centre)	
26	Blood pressure measurement	

No.	Procedure Description	Category
27	Weight measurement	
28	Wound dressing	
29	Post-road traffic accident dressing	
30	Post-caesarean section dressing	
31	Packing dressing (mèche)	
32	Perineal suture	
33	Suture of traumatic lesion (per stitch)	
34	Suture of traumatic lesion (more than five stitches)	
35	Circumcision	
36	Incision and drainage of abscess	
37	Wound debridement / non-extensive soft-tissue trauma	
38	Wound debridement / extensive soft-tissue trauma	
39	Burns debridement dressing	
40	Nasogastric tube insertion	
41	Urinary catheter insertion	
42	Removal of indwelling catheter	
43	Oxygen therapy per hour (adult)	
44	Oxygen therapy per hour (neonate)	
45	Neonatal resuscitation	
46	TIUB insertion	
47	Family planning device insertion (IUD or implant)	
48	Jadelle removal	
49	IUD removal	
50	Foreign body removal	
51	Fluid aspiration (paracentesis)	
52	Suprapubic aspiration	
53	Ear irrigation	
54	Nasal irrigation	
55	Evacuant enema	
56	Nebulisation (aerosol therapy) per session	
57	Frenectomy (frenotomy)	
58	Ear piercing	
59	Miscellaneous outpatient care (including catch-up vaccination)	
1	ABO blood group – Rhesus factor (ABO-Rh)	Biological laboratory investigations (n=74)
2	Haemoglobin level	
3	Haematocrit / Haemoglobin and haematocrit	
4	White blood cell count	
5	Full blood count (FBC)	

No.	Procedure Description	Category
6	FBC + platelets	
7	Reticulocyte count	
8	FBC + platelets + reticulocytes	
9	Blood ionogram (serum electrolytes)	
10	Urine ionogram	
11–13	Na ⁺ , K ⁺ , Cl ⁻ (selective electrolytes)	
14	Glycated haemoglobin (HbA1c)	
15–18	Blood glucose, urine dipstick (3 parameters), glucosuria, capillary blood glucose	
19–21	Serum creatinine, urea, uric acid	
22–26	Triglycerides, total cholesterol, HDL, serum calcium, serum magnesium	
27–32	AST (SGOT), ALT (SGPT), GGT, total protein, Emmel test, Hb electrophoresis	
33–39	Thick blood film/differential, SDW, TPHA, VDRL, standard MCUS, MCUS + sensitivity, CSF culture	
40–44	Pus culture, ascitic fluid culture, CSF glucose, CSF biochemistry, CRP	
45–50	ESR, bleeding time, clotting time, stool examination (AKOP/coprology), HBs Ag, anti-HCV	
51–58	HIV, AFB smear, semen analysis, thyroglobulin (serum/urine), ASLO, total/direct bilirubin, PSA	
59–65	H. pylori Ag, total protein, bilharzial ova, bile salts, bile pigments, tuberculin skin test (TST/IDR), microfilaria	
66–72	Vaginal swab, TSH, LH, T3, T4, toxoplasmosis serology, rubella serology	
1	Obstetric ultrasound	Medical imaging examinations (n=4)
2	Pelvic ultrasound	
3	Abdomino-pelvic ultrasound	
4	Dental radiograph	
1–11	Fundoscopy, dental extraction (wisdom tooth, incisor/canine, premolar/molar), stomatology consultation, scaling, obturation (amalgam, simple), pulpectomy (incisor, molar, premolar)	Specialist procedures* (n=17, Cotonou only)

* Specialist procedures available in Cotonou districts only.

References

- [1] World Health Organisation, World Bank Group. Tracking Universal Health Coverage: 2023 Global Monitoring Report. Geneva: WHO/World Bank Group; 2023.
- [2] Institut National de la Statistique et de la Démographie (INStAD). Note on Poverty in 2022 – Results of the Harmonised Survey on Living Conditions of Households (EHCVM) 2021–2022. Cotonou: INStAD; 2023.
- [3] Paul E, Sambiéni NE, Wangbe J-P, Fecher F, Bourgeois M. Budgeting challenges on the path towards universal health coverage: the case of Benin. *Health Econ Rev.* 2020, 10(1), 28. <https://doi.org/10.1186/s13561-020-00286-9>
- [4] Ministry of Health of Benin. Report of the Survey on the Availability and Operational Capacity of Health Services (SARA/HHFA) in Benin 2022. Cotonou: Ministry of Health; 2023.
- [5] World Health Organisation. Trends in maternal mortality 2000 to 2020: estimates by WHO, UNICEF, UNFPA, World Bank Group and UNDESA/Population Division. Geneva: WHO; 2023.
- [6] Gilson L. The lessons of user fee experience in Africa. *Health Policy Plan.* 1997, 12(3), 273–285. <https://doi.org/10.1093/heapol/12.3.273>
- [7] Houngbeme DJ-L. In Benin, living conditions are deteriorating despite slight economic growth. Dispatch No. 575. Abidjan: Afrobarometer; 2022.

- [8] Africa Evidence Network. Poverty dynamics and the Figures of those left behind in Atacora and Donga (Northwest Benin). Johannesburg: Africa Evidence Network; 2023.
- [9] Ministry of Health of Benin. Roadmap: Revision of Health Service Fees in Benin. Service Note No. 0537-2025/MS/DC/SGM/SP. Cotonou: Ministry of Health; 2025.
- [10] World Bank. Benin Overview: Development Data [Internet]. Washington, DC: World Bank; 2024 [cited 12 April 2026]. Available from: <https://www.worldbank.org/en/country/benin/overview>
- [11] Houeninvo HG, Bello K, Hounkpatin H, Dossou J-P. Developing and implementing National Health Insurance: learnings from the first try in Benin. *BMJ Glob Health*. 2022, 7(11), e009027. <https://doi.org/10.1136/bmjgh-2022-009027>
- [12] ACTwatch Group, Zinsou C, Cherifath AB. The malaria testing and treatment landscape in Benin. *Malar J*. 2017, 16(1), 174. <https://doi.org/10.1186/s12936-017-1808-x>
- [13] Dossou J-P, De Brouwere V, Van Belle S, Marchal B. Opening the 'implementation black-box' of the user fee exemption policy for caesarean section in Benin: a realist evaluation. *Health Policy Plan*. 2020, 35(2), 153–166. <https://doi.org/10.1093/heapol/czz146>
- [14] Grossman M. On the concept of health capital and the demand for health. *J Polit Econ*. 1972, 80(2), 223–255.
- [15] Lagarde M, Palmer N. The impact of user fees on health service utilization in low- and middle-income countries: how strong is the evidence? *Bull World Health Organ*. 2008, 86(11), 839–848. <https://doi.org/10.2471/BLT.07.049197>
- [16] Institut National de la Statistique et de la Démographie (INStAD). Demographic Projections from 2014 to 2063 and Perspectives on Social Demand from 2014 to 2030 in Benin. Cotonou: INStAD; 2022.
- [17] Ministry of Health of Benin. Health Statistics Yearbook 2024. Cotonou: SNIGS-MS; 2025.
- [18] Republic of Benin. Law No. 90-32 of 11 December 1990 on the Constitution of the Republic of Benin. Cotonou; 1990.
- [19] Republic of Benin. Law No. 97-020 of 17 June 1997 on the Organisation of Health Care in the Republic of Benin. Cotonou: Government of Benin; 1997.
- [20] Republic of Benin. Law No. 2020-37 of 3 February 2021 on the Protection of Persons' Health in the Republic of Benin. Cotonou; 2021.
- [21] Republic of Benin. Decree No. 88-444 of 18 November 1988 on the Introduction of Medicine Sales in Public Health Facilities and Confessional or Associative Private Health Centres. Cotonou: Government of Benin; 1988.
- [22] Republic of Benin. Law No. 2021-03 of 1 February 2021 on the Organisation of Pharmaceutical Activities in the Republic of Benin. Cotonou: National Assembly; 2021.
- [23] Republic of Benin. Decree No. 96-25 of 23 January 1996 on the Method of Determining Public Prices for Medicines and Pharmaceutical Specialities in the Republic of Benin. Cotonou; 1996.
- [24] Republic of Benin. Decree No. 97-321 of 17 July 1997 on the Regulation of Social Assistance in the Republic of Benin. Cotonou; 1997.
- [25] Institut National de la Statistique et de la Démographie (INStAD). Harmonised Survey on Living Conditions of Households (EHCVM) 2019. Cotonou: INStAD; 2020.
- [26] Olago A, Suharlim C, Hussein S, Njuguna D, Macharia S, Muñoz R, et al. The costs and financing needs of delivering Kenya's primary health care service package. *Front Public Health*. 2023, 11, 1226163. <https://doi.org/10.3389/fpubh.2023.1226163>
- [27] Jacobs B, Hui K, Lo V, Thiede M, Appelt B, Flessa S. Costing for universal health coverage: insight into essential economic data from three provinces in Cambodia. *Health Econ Rev*. 2019, 9(1), 29. <https://doi.org/10.1186/s13561-019-0246-6>
- [28] Wagstaff A, Van Doorslaer E. Equity in health care finance and delivery. In: Culyer AJ, Newhouse JP. *Handbook of Health Economics*. Elsevier; 2000. pp. 1803–1862.
- [29] O'Donnell O, Van Doorslaer E, Wagstaff A, Lindelow M. *Analysing Health Equity Using Household Survey Data*. Washington, DC: World Bank; 2008.
- [30] Ndayishimiye C, Sowada C, Dubas-Jakóbczyk K, Flessa S. Costing primary health care services in Burundi: evidence for universal health coverage planning. *Front Public Health*. 2024, 13, 1446497. <https://doi.org/10.3389/fpubh.2023.1446497>
- [31] Koduah A, Baatiema L, Cronin de Chavez A, Danso-Appiah A, Kretchy IA, Agyepong IA, et al. Implementation of medicines pricing policies in sub-Saharan Africa: systematic review. *Syst Rev*. 2022, 11, 214. <https://doi.org/10.1186/s13643-022-02114-z>
- [32] Palmer S, Torgerson DJ. Definitions of efficiency. *BMJ*. 1999, 318(7191), 1136. <https://doi.org/10.1136/bmj.318.7191.1136>
- [33] Kruk ME, Goldmann E, Galea S. Borrowing and selling to pay for health care in low- and middle-income countries. *Health Aff*. 2009, 28(4), 1056–1066.
- [34] Knaul FM, González-Pier E, Gómez-Dantés O, García-Junco D, Arreola-Ornelas H, Barraza-Lloréns M, et al. The quest for universal health coverage: achieving social protection for all in Mexico. *Lancet*. 2012, 380(9849), 1259–1279. [https://doi.org/10.1016/S0140-6736\(12\)61068-X](https://doi.org/10.1016/S0140-6736(12)61068-X)
- [35] Dzakpasu S, Powell-Jackson T, Campbell OMR. Impact of user fees on maternal health service utilisation and related health outcomes: a systematic review. *Health Policy Plan*. 2014, 29(2), 137–150. <https://doi.org/10.1093/heapol/czs142>
- [36] Witter S, Dieng T, Mbengue D, Moreira I, De Brouwere V. The national free delivery and caesarean policy in Senegal: evaluating process and outcomes. *Health Policy Plan*. 2010, 25(5), 384–392.
- [37] Xu K, Evans DB, Kawabata K, Zeramdini R, Klavus J, Murray CJ. Household catastrophic health expenditure: a multicountry analysis. *Lancet*. 2003, 362(9378), 111–117. [https://doi.org/10.1016/S0140-6736\(03\)13861-5](https://doi.org/10.1016/S0140-6736(03)13861-5)

- [38] Blanchet NJ, Fink G, Osei-Akoto I. The effect of Ghana's National Health Insurance Scheme on health care utilisation. *Ghana Med J.* 2012, 46(2), 76–84.