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RESEARCH ARTICLE

Malaria Case-Management in Urban Area: Various Challenges in Public and Private Health Facilities in Benin, West Africa

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Abstract:

Background:

In Benin, malaria remains endemic and perennial throughout the year in most areas. During the last decade, a substantial increase was noticed in the procurement of Artemisinin-based combination therapies and malaria RDT. This study aimed to evaluate the quality of uncomplicated malaria cases-management in public and private health facilities.

Methods:

A cross-sectional survey was carried out in public and private health facilities in the municipality of Abomey-Calavi in southern Benin from August to September 2016. The study focused on two targets: (i) patients with uncomplicated malaria who sought care in a health facility in Abomey-Calavi during the study period; and (ii) the health care providers in public and private health facilities authorized by the Ministry of Health.

Results:

In 27 health facilities investigated, 15 in the public sector and 12 in the private sector, a total of 313 patients and 93 health care providers were included. Forty-four percent (44%) had no education. Among the patients, 60% were identified in the public health facilities. About 87% of uncomplicated malaria patients were tested in public facilities while 63% were tested in private facilities. In the same way, 54% of patients were treated in accordance with National Malaria Control Program (NMCP) guidelines.

Conclusions:

The present study showed a poor performance in uncomplicated malaria case-management in private health facilities compared to public health facilities. Strategy to improve access and utilization of malaria case-management supplies needs to be reviewed in both public and private health facilities.

Keywords: Malaria case-management, National Policy, Health facilities, Public and private, Benin, National Malaria Control Program (NMCP).

1. BACKGROUND

Malaria is a global public health issue and a significant problem in sub-Saharan Africa. Benin is not an exception, however recent reports published by the World Health Organization (WHO) indicate significant progress in control [1].

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Generally, the number of malaria cases was estimated at about 212 million in 2015. By 2015, 90% of cases were recorded by the WHO in the African Region [1]. In Benin, malaria remains endemic and perennial throughout the year in most areas [2 - 5]. Over the past decade, malaria was the leading cause of consultations and hospitalization in health care facilities. In 2012, 41% of reasons for outpatient visits, 29% of reasons for hospitalization and 26% of deaths were attributed to malaria for all age groups [6]. Since the year 2000, a significant investment has been made in health facilities to improve the quality of care and reduce malaria indicators in a specific way. From 2000, Benin adopted the WHO recommendations of uncomplicated malaria case treatment by approving Artemisinin-based Combined Therapy (ACT) [7]. This new approach for uncomplicated malaria case-management was introduced by the National Malaria Control Program in Benin (NMCP) for the first time in the National Strategic Plan (NSP) 2005-2010 [8]. The selected ACT were the Artemether-Lumefantrine (AL) as first line treatment for uncomplicated malaria and the Artesunate-Amodiaquine as the second line. In addition, over the last decade, malaria case confirmation using Rapid Diagnostic Tests (RDT) or microcopy was strongly recommended prior to any anti-malarial treatment [9]. There has been a substantial increase in the distribution of ACT and RDT as requested by the WHO universal access to malaria commodities policy. From 2014 to 2015, the procurement of malaria RDT packages increased from 1.3 million to almost 1.5 million [1]. Similarly, the procurement of ACT doses increased from 1.1 million in 2014 to 1.2 million in 2015. In Benin, the strategy of malaria case management varies between urban and rural area. In rural areas, the community case management is promoted by using community health workers. The private health centres are rare and the population usually goes to public health centres. In opposition, in urban areas, there is no community case management and people seek care from public and private health centers.

In order to determine the future actions to be carried out to reach the malaria elimination objectives by 2030 in Benin, it is necessary to evaluate the quality of uncomplicated malaria cases-management in public and private health facilities.

2. METHODS

2.1. Site Description

The study was carried out in public and private health facilities of the municipality of Abomey-Calavi in southern Benin. Abomey-Calavi is 12 km away from Cotonou. It extends over 650 km² and is the second most populous commune in Benin with an estimated population of 656, 358 inhabitants [10]. Abomey-Calavi has several infrastructures: Two referral hospitals (Abomey-Calavi / So-Ava hospital and La Croix Hospital), 13 public health facilities and 216 private health facilities. These health facilities employ 498 health workers.

2.2. Study Design

A cross-sectional, descriptive and evaluative survey was carried out from August to September 2016. The study focused on two targets: (i) patients with uncomplicated malaria who sought care in a health facility in Abomey-Calavi during the study period; and (ii) Prescribers from public and private health facilities authorized by the Ministry of Health (MoH). Patients enrolled into the study met the following criteria: i) presence of fever with other malaria-related symptoms (chill, headache, vomiting, joint pain), and ii) patients with prescription that who had at least one anti-malarial treatment. People who withdrew their informed consent were excluded from the study.

2.3. Sample Size

An exhaustive list of public health facilities was considered as follows: two referral hospitals and 13 health facilities. In private health facilities, the sampling method is probabilistic with a systematic sampling technique to draw 13 structures. From the list of 216 private health facilities, a sampling interval “f” was calculated: $f = N / n$ where N is the total number of private health facilities and “n” the number of private health facilities necessary to be surveyed. A number was randomly selected between 1 and 16 and then we applied the sampling pitch to obtain the numbers corresponding to the 13 private health facilities to be investigated. Within each health facility, an exhaustive census of all patients with symptoms of uncomplicated malaria was carried out. After that the health care providers were interviewed. The content of the prescriptions for the management of uncomplicated malaria or the appropriateness of the prescriptions were also investigated.

2.4. Score of “Uncomplicated Malaria Case-Management” and the Healthcare Provider’s Adherence to the Recommendation

The main variable was the quality of uncomplicated malaria case management. It was estimated using a score. The calculation of this score was based on five components: i) the diagnostic confirmation rate, ii) the percentage of patients who received a correct treatment with the recommended anti-malarial drugs, iii) the percentage of patients who received preventive advice iv) the percentage of patients who received a follow-up appointment, and v) the percentage of patients who received good quality for overall care (Table 1).

Table 1. Sample description of patients.

Variables	N	%
Age (years)		
[0-5]	77	24.60
[5-15]	87	27.80
≥15	149	47.60
Sex		
Male	164	52.40
Female	149	47.60
Level of education		
None	138	44.09
Primary	75	23.93
Secondary	68	21.73
Higher	32	10.22
Type of health care facility		
Public	187	59.74
Private	126	40.26

For each of the first four criteria, the minimum score was 1 and the maximum was 3: i) Between 75% and 100%, the score was 3, the criterion assessment was good or high, ii) Between 50% and 75%, the score was 2, the criterion was acceptable, and iii) Between 0% and 50%, the score was 1, the criterion assessment was bad or low. As for the last indicator, the overall quality of management was of good quality if: (i) The physical examination, was conducted (ii) the diagnostic confirmation test was done, (iii) the received anti-malarial treatment was correct, (iv) the advice had been given and v) the follow-up appointment was given. The minimum score was 1 and the maximum score was 3. The assessment of the quality of care criterion was made with the same thresholds as the previous criteria. The threshold for adherence to malaria access management standards recommended by the NMCP was measured by considering the following thresholds:

- Between 12 and 15 points: good care quality.
- Between 9 and 11 points: Intermediate care quality.
- Between 5 and 8 points, poor care quality.

Other information like age, gender, and educational level were collected from the patients.

2.5. Data Collection and Analysis

During the survey, the patients were selected over five days in the health facility and reviewed for follow-up visit. Two surveyors were employed during the study. The observation and individual interviews were conducted. For this purpose, an observation grid and a questionnaire were used.

Initially, the investigators were present in the consultation room and observed how the health worker or health providers took care of patients suffering from malaria. Data was collected from health workers by using a self-administration questionnaire procedure. The observation grids and survey forms were filled in by the investigators themselves. The data was entered in CSPro version 6.0 and then exported to SPSS version 18 for analysis. Results were presented using averages and proportions. The proportions were calculated for each indicator and their threshold was used to determine the scores. Chi-square test or Fisher's exact test to compare proportions was used to compare baseline results at a significant level of p less than 0.05.

2.6. Ethical Aspects

Ethical approval of the study was obtained from the Faculty of Health Sciences at Cotonou. Informed written consent was sought from all eligible patients and practitioners. The anonymity and confidentiality were guaranteed. All analytical work was conducted on de-identified datasets.

3. RESULTS

A total of 313 patients and 93 health care providers were included in the study. The response rate was 91.0% among the patients and the 85.3% among the health care providers. Among the 28 health facilities targeted, 27 were investigated, 15 in the public and 12 private. One private health facility refused to take part in the study.

3.1. Description of the Study Population

3.1.1. Description of the patients

About half of the patients (48%) were aged more than 15 years. About 52% of the patients were male and 44% were not educated. Among the patients, 60% were identified in the public health facilities (Table 2). Approximately 98% of the patients reported that their hospitalization was satisfactory. In addition, 97% of the patients were cared for by paramedics (nurses and midwives) in public health facilities, while 94% were cared for by doctors in private health facilities.

Table 2. Awareness on malaria management by the health workers in public and private health facilities.

	Public		Private		p
	N	(%)	N	(%)	
Awareness on malaria management policy					
Yes	56	91.80	24	75.00	0.0567
No	5	8.20	8	25.00	
Trained on the new malaria management policy					
Yes	51	83.61	11	34.38	<0.0001*
No	10	16.39	21	65.63	
Availability of therapeutic guideline for malaria case-management					
Yes	51	83.61	14	43.75	<0.0001*
No	10	16.39	18	56.25	

3.1.2. Description of the Health Care Providers

The mean age of the 93 health care providers was 36 ± 2 years with a minimum at 22 years and a maximum at 62 years. Three-quarters (73%) of health care providers were female and 66% were in public health facilities.

3.2. The Level of Awareness of Health Care Providers According to the Type of Health Facilities (Public or Private)

The difference between the level of awareness of the national malaria management policy was not statistically significant between public (91%) and private (75%), $p = 0.0567$. The rate of awareness on the new-malaria-management policy was higher in public (84%) than in private sector (34%), ($p < 0.0001$). Finally, the therapeutic guide for malaria case-management was available for 84% of providers in public sector compared to 44% in private sector ($p < 0.0001$), (Table 3).

Table 3. Evaluation of uncomplicated malaria case-management.

Variables	N	%	Score Obtained
Physical examination			
Public	89	47.59	3
Private	96	76.19	2
Parasitological diagnosis			
Public	162	86.63	3
Private	80	63.49	2
Conform treatments*			

(Table 5) *contd....*

Variables	N	%	Score Obtained
Public	131	70.05	2
Private	38	30.16	1
Counselling			
Public	159	85.03	3
Private	50	39.68	1
Follow-up appointment			
Public	167	89.30	3
Private	92	73.02	2
Overall malaria-patient management by using the fifth criteria simultaneously			
Public	105	56.15	2
Private	6	4.76	1

* According to the National Malaria Control Program guidelines.

3.3. Quality of Malaria Case-Management in Public and Private Sectors

According to public and private health care providers, the availability of diagnostic tests was 67% and the recommended medicines availability was 58%.

3.3.1. Diagnosis of Uncomplicated Malaria Cases

In all health facilities, 59% of the patients were examined with 48% in public and 76% in private in search of an infectious focus. The malaria diagnostic confirmation rate was 77% with 87% in the public and 63% in the private sector (Table 4). As far as the diagnostic tests used are concerned, 58% were RDTs in the public sector compared to 2.5% in the private sector.

Table 4. Type of prescribed anti-malarial drugs.

Anti-malarial	N	%
Artemether-lumefantrine*	210	62.31
Artesunate-amodiaquine tablets*	1	0.30
Quinine tablets*	86	25.52
Artesunate-sulfamethoxypyrazine*	5	1.48
Dihydroartemisinin-pyepapine*	8	2.37
Cotrimoxazole*	2	0.59
Artemether§	24	7.12
Artesunate§	1	0.30

3.3.2. Advice on Malaria Management and Prevention

Approximately, 67% of the patients received advice from a health worker on malaria with 85% in the public and 40% in the private sector (Table 4). Given that one patient received counseling more than once, the primary focus was on disease prevention (81%), return to follow-up (59%), continued treatment and good diet (52%) and rapid return to a health facility in case of severe signs (14%).

3.3.3. Follow-Up Appointments

83% of the patients received follow-up appointments after initial management. This proportion was 89% in the public and 73% in the private sector (Table 4). Among the 259 patients who received a follow-up appointment, only 54% had it within 48 hours and 51% did not show up for the appointment.

3.3.4. Good Overall Care of the Patient

Among the 313 patients surveyed, 35.5% had good overall care, while 56% and 5% respectively, were in the public and private sectors (Table 4).

3.4. Type of Treatment of Uncomplicated Malaria Cases According to National Guidelines

The type of treatment was in accordance with NMCP guidelines at 54% with 70% in public health facilities and 30% in private sector (Table 4). The most frequently used anti-malarials were AL (62.31%), quinine (25.52%) and injectable artemether (7.12%), (Table 5).

Table 5. Adherence of public and private health care facilities to the guidelines of simple malaria case-management.

Sub-component	Maximum Score	Score		Adherence Appreciation	
		Public	Private	Public	Private
Case confirmation	3	3	2	High	Acceptable
Conform treatment	3	2	1	Acceptable	Low
Counselling	3	3	1	High	Low
Follow-up appointment	3	3	2	High	Acceptable
Case-management of quality	3	2	1	Acceptable	Bad
Adherence to the guidelines	15	13	7	Good	Bad

To summarize, in public sector, criteria such as the diagnostic confirmation rate, follow-up appointments and counseling had a high score, adequate treatment of uncomplicated malaria with appropriate medication, and the overall management had an acceptable score. On the other hand, in private sector, criteria such as the diagnostic confirmation rate and follow-up appointments had an acceptable score. The overall quality of patient management, counseling and adequate treatment with an appropriate medication had a low score. The adherence to case-management for uncomplicated malaria cases had a good score in public health facilities (13/15) and a poor score in private health facilities (7/15), (Table 6).

Table 6. Adherence of public and private health care facilities to the guidelines of simple malaria case-management.

Sub-component	Maximum Score	Score		Adherence Appreciation	
		Public	Private	Public	Private
Case confirmation	3	3	2	High	Acceptable
Conform treatment	3	2	1	Acceptable	Low
Advice	3	3	1	High	Low
Follow-up appointment	3	3	2	High	Acceptable
Case-management of quality	3	2	1	Acceptable	Low
Adherence to the NMCP guidelines	15	13	7	Good	Poor

4. DISCUSSION

The study aimed to assess the quality of management of uncomplicated malaria cases in the public and private health facilities in the municipality of Abomey-Calavi in 2016. It gives us basic information that can be used by the Ministry of Health and the NMCP authorities. From the calculated scores according to the NMCP guidelines, the study showed that simple-malarial-access case-management is better in public than private health facilities. However, it should be noted that the presence of an interviewer in the consultation room during the direct observation of the acts of care could have induced a change in the usual behavior of the providers.

Among the 93 providers, the level of awareness of the national policy of management of uncomplicated malaria is high (86%) with 75% in the private sector. A contrary study conducted in 2013 showed a lower level of health care providers awareness (44%) in the private sector in Guinea compared to Benin [11]. The present study also highlighted the problem of low qualification of health care providers in public health facilities. Indeed in the public sector, unlike private sector, care giving including medicines prescriptions are delivered by paramedics. This same observation was made during the evaluation of the implementation of the national policy of uncomplicated malaria treatment in rural Burkina Faso in 2012 [12]. The poor qualification of healthcare providers in public sector may affect the quality of care, in the case where the clinical examination of patients requires a high level of awareness of medicine. The last results were confirmed by data from this study, which shows that only 48% of patients received a physical checkup in public, compared to 76% in private sector.

According to the current study, the diagnostic confirmation of malaria cases had a high score. Indeed, more than 80% of the cases were confirmed in public health facilities compared to 63% in private sector. In addition, 58% used RDTs in the public sector, compared with 2.5% in private sector. These observations are similar to those reported by the NMCPs, which indicate that the percentage of suspected cases of malaria in public sector increased from 40% of suspected case in 2010 in the WHO African region to 76% in 2015. This increase was mainly due to increased use of RDTs, which counts for 74% of the means of detection among suspected cases of malaria in 2015 [1]. It is therefore critical to review the availability and use of RDTs in private health facilities.

In the current study, the rate of adequate treatment with an anti-malarial drug is acceptable. This proportion is lower than that observed in Burkina Faso in 2011 (82.4%) [12]. According to the importance of artemether-lumefantrine (67%), quinine (27.5%) and injectable artemether (8%), the most common anti-malarial drugs used to treat uncomplicated malaria were artemether-based regimens. These observations are almost similar to those found in Guinea, where 39.8% of anti-malarial drug prescriptions were not in line with the guidelines of the national protocol for malaria cases-management [11]. According to another study carried out in Burkina Faso in 2012, 57.49% of prescriptions were compliant for all malaria cases [13]. Persistent use of quinine and artemisinin-based monotherapy may be explained by a failure of integration of private health facilities into the anti-malarial treatment national policy contrary to other African countries: Nigeria, Ghana, Kenya, Madagascar, Niger, Uganda, and Tanzania [14, 15]. The use of non-artemisinin therapy (quinine and anti-malarial monotherapy) remains in malaria case-management behavior. It can be explained by the cost of this non-artemisinin therapy compared to ACT [16].

According to the WHO, anti-malarial treatment was more likely to be ACT if children sought care from public health facilities or community health workers than if they turned to private sector [1]. A recent study conducted in Benin by ACT watch Group concluded that the public sector is typically well equipped to test and appropriately treat malaria according to national treatment guidelines. However, the private sector is responsible for most of the anti-malarial distribution, typically through general retailers, which represent informal channels of ACT distribution [16]. Another national study conducted in six countries (Benin, Madagascar, Uganda, Zambia, DRC and Nigeria) showed a low availability, a low market share and high prices of ACT in the private sector [17]. Finally, a large proportion of patients received advice on malaria prevention with 85% in public health facilities and 40% in private. All these findings highlight a national issue of the actual appropriation of national malaria control policy in Benin by private health facilities. The main consequence of these observations is that adherence to case-management for uncomplicated malaria cases had a good score in public health facilities and a bad one in private ones. These results are probably due to the lack or inadequate application of quality standards (certification and accreditation) for health facilities in Benin. One of the solutions is to use public health facilities for capacity building for private ones, and induce changes of adherence of health care providers in line with the national recommended standards to treat malaria [18]. A fully distributed system which allows secure sharing of all information (both medical and not) necessary for patients management can be used to improve the evaluation of the performance of health system. Patients and health care providers data be quickly and easily accessed [19].

The major limitation of this study is the presence of the investigators in the consultation room. The consequence is probably the overestimation of the adherence to case-management for uncomplicated malaria cases, the main indicator of the study.

CONCLUSION

The present study showed a poor performance in uncomplicated malaria case-management by care providers of private health facilities compared to public health facilities. Although considerable progress has been made in recent years, Benin must continue to ensure access to a good quality of care in both public and private sectors and strive to ensure that every patient is taken care of in the shortest possible time with anti-malarial of good quality.

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

Not applicable.

HUMAN AND ANIMAL RIGHTS

No Animals/Humans were used for studies that are base of this research.

CONSENT FOR PUBLICATION

Written and informed consent was obtained for this study.

CONFLICT OF INTEREST

The authors declare no conflict of interest, financial or otherwise.

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