Scientific
Research
Publishing

Coverage and Factors Associated with Acceptance and Satisfaction of Seasonal Malaria Chemoprevention in Six Health Zones in Benin

Cyriaque Affoukou[1,2*], Georgia Damien[1], Thibaud Lègba[3],
Olarewadjou Richard Biaou Boni[4], Géraud Padonou[3], Rock Aïkpon[2], William Houndjo[2],
Camille Houetohossou[2], Elysé Sohizoun[3], Aurore Ogouyèmi[2], Badirou Aguèmon[1]

[1]Community Health and Epidemiology Unit, Faculty of Health Sciences, University of Abomey-Calavi, Cotonou, Benin
[2]National Malaria Control Program of Benin, Cotonou, Benin
[3]Ministry of Health, Cotonou, Benin
[4]Laboratory of Epidemiology of Chronic and Neurological Diseases (LEMACEN), Faculty of Health Sciences, University of Abomey-Calavi, Cotonou, Benin
Email: *moiacdm@yahoo.fr

Abstract

Introduction: Seasonal malaria chemoprevention (SMC) was adopted in 2019 in two health zones in Benin where malaria transmission is very high. Positive results led to the extension of the intervention to other zones with additional financial support. Annual SMC campaigns from 2021 to 2023 were carried out in all six health zones in the Atacora and Alibori departments. In five years of implementation, various approaches have been developed on the basis of a communication plan facilitating buy-in and acceptance by all stakeholders. The aim of this study was to assess the effective coverage and acceptance of the SMC by their beneficiary populations in 2023. **Methods**: It was a cross-sectional study with an analytical focus. Data collection took place from November 30 to December 13, 2023. The study population consisted of children under 5 years of age residing in the departments of Atacora and Alibori in northern Benin. A total of 3573 children under 5 years of age were included in the study, and their parents or guardians were interviewed. **Results**: During the 2023 campaign, 87.7% of targets were reached by SMC administration and 100.00% of children had received at least one dose of SMC by the fourth visit. Effective therapeutic coverage of SMC was 70.55%, with 99.60% in BNK, 69.40% in KGS, 16.20% in MK, 56.10% in 2KP, 92.40% in NBT and 89.60% in TMC. This coverage was statistically related to child and respondent ages (p < 0.01), good levels of education (p < 0.01), knowledge of the benefits of SMC

(p < 0.01), and the types of strategies adopted (p < 0.01). Most (98.32%) mothers/caregivers adhered to SMC, with an acceptability level of 94.79%. **Conclusion**: SMC is a strategy accepted by the population, and the main reasons for non-participation in SMC were dominated by the absence of mothers or babysitters when the agents visited.

Keywords

Coverage, Acceptance, SMC, Benin

1. Introduction

The Malaria is a parasitic disease caused by a protozoan of the Plasmodium genus, transmitted to humans through bites from infected female mosquitoes known as Anopheles, which are the "malaria vectors" [1]. Sub-Saharan Africa bears the heaviest burden of malaria. According to the latest estimates by the world health organization (WHO), 249 million cases of malaria occurred in 2022, with 94% of them in the African region [2] [3]. In this area, children under five years old are one of the most vulnerable groups with a high risk of malaria-related mortality [3] [4] [5]. In Benin, malaria is the leading cause of consultations (42.5%) and hospitalizations (25.5%) among children under five years old in 2022 [6]. The majority of cases occur during the rainy season, indicating the seasonal nature of the disease.

Benin, facing the current challenges of reducing malaria-related mortality and morbidity, has committed, like other countries in the sub-region, to adopting this new strategy in six health zones (HZ) in northern Benin in 2023, where malaria transmission is very high during the rainy season. The aim of this study is to evaluate the effective coverage and acceptance of the SMC by the beneficiary population.

2. Study Framework, Materials, and Methods

2.1. Study Framework

The study was conducted in six health zones, comprising fifteen (15) communes from six health zones in northern benin, namely banikoara (BNK), kandi-gogounou-segbana (KGS), and malanville-karimama (MK) in Alibori, natitingoubouKombe-toucountouna (NBT), kouande-kerou-pehunco (2KP), and tanguieta-materi-cobly (TMC) in the Atacora department. These are the six health zones that received the digitized SMC in 2023.

2.2. Materials

According to WHO recommendations and the national protocol of Benin, eligible children for SMC received 01 dose of SP + AQ on Day 1, 01 dose of AQ on Days 2 and 3 under the supervision of community relays (CRs) for 4 months [7]

[8]. In 2020, this protocol was modified, with only the SP + AQ dose on Day 1 being supervised, while the AQ doses on Days 2 and 3 were left to be administered by mothers or guardians. Before the implementation campaign (MEO) of SMC, the PNLP, with the support of intermediate and peripheral actors in Benin's healthcare system, recruited and trained community relays responsible for administering SP + AQ to eligible children in their localities. These CRs were supervised by proximity supervisors (PS) and post chiefs to ensure strict adherence to the administration protocol. A pharmacovigilance system was put in place for managing adverse effects. Additionally, awareness messages were broadcasted through local radios and public announcers before and during the MEO days. Advocacy activities were also conducted with political-administrative authorities, local elected officials, traditional leaders, and religious leaders to gain their support for the national SMC strategy.

2.3. Methods

2.3.1. Type and Population of Study
It was an analytical cross-sectional survey conducted between November 30 and December 13, 2023. The study population consisted of mothers/caregivers of children aged 03 to 59 months who participated in the 2023 SMC campaign in the Alibori and Atacora departments. The primary target was children aged 3 to 59 months, and the secondary target was mothers/caregivers of children aged 3 to 59 months.

Children aged 3 to 59 months whose parents had been living in one of the six health zones for at least one year prior to the survey were included in the study.

2.3.2. Sampling Technique and Size
Sampling was two-stage random. In the first stage we selected by simple random draw 12 enumeration zones in each of the 15 communes based on data from the fourth General Census of Population and Housing (RGPH4) of 2013. Then, in each enumeration zone, all households with children under the age of 5 were counted. The second stage involved randomly selecting 20 households in each enumeration area.

The estimated sample size was 3600 participants, *i.e.*:

(15 communes) * (12 enumeration zones) * (20 households).

2.3.3. Data Collection Techniques and Tools
The data collection technique was a structured interview between interviewer and respondent. The data collection tool was a standardized questionnaire addressed to mothers/caregivers. The questionnaire was digitized using the Kobo-Tolbox platform and collected using smartphones.

The digitized 2023 SMC database was used to generate the SMC coverage indicators.

2.3.4. Data Processing and Analysis
Data analysis was carried out using Stata 11.2 and Minitab version 16 software.

Variables were described by calculating weighted proportions for qualitative variables and weighted means with standard deviations for quantitative variables following a normal distribution. Graphs were produced using RStudio software version 4.2.2. Comparisons of coverage were made using Pearson's Chi-square test, with a significance level of 5% for univariate analysis. For the multivariate analysis, variables whose p-value was less than or equal to the 20% threshold in the univariate analysis were inserted into a stepwise ascending model. The threshold for retaining variables in the final model was 5%.

The strength of association between variables was presented by the crude Odds ratio for univariate analysis and the adjusted Odds ratio for multivariate analysis.

2.3.5. Ethical Considerations

The study had received the approval of the CER-ISBA Research Ethics Committee (decision N˚190 of December 06, 2023). The survey was carried out after authorization for data collection had been granted by the two Departmental Directors of Health and the two doctors coordinating the health zones. In the field, the objectives of the survey were clearly explained to participants, and questionnaires were administered after obtaining their free, written and informed consent. Respondents' anonymity was respected.

3. Results

3.1. Study Subject

A total of two departments, six health zones, 15 communes and 172 enumeration areas were investigated. Out of 6345 households counted, 3573 eligible children were randomly selected out of a planned 3600, giving a participation rate of 99.25%. The number of children was equivalent to the number of households and respondents.

According to socio-demographic characteristics, the average age of mothers was 33.89 ± 8.18 years and 29.1 ± 15.10 months for children. Respondents aged 15 to 24 represented 13.1%, those aged 25 to 49 81.7% and those aged 50 and over 5.2% of the sample. Children aged 3 - 11 months represented 20.0% (n = 716) and those aged 12 - 59 months 80.0% (n = 2857) of respondents. The child sex ratio was 0.85 (M/F), and 65.7% of mothers/caregivers were uneducated, compared with 34.3% who had at least primary education. Most were married (87.3%). 63.7% of the children's mothers/caregivers lived in rural areas.

3.2. Coverage of SMC in 2023

3.2.1. Complete Dose Coverage by Health Zone

For zones with one supervised dose, an affected child was one who received the required number of doses during the four rounds. The TMC health zone (one supervised dose) was the one with the highest coverage rate for full SMC cycles. Coverage of SMC doses by zone with different strategies is shown in Table 1 below.

Table 1. Coverage of SMC doses.

Health Zones	Children Covered	Complete Doses	Coverage of Complete Cycle (%)
BNK	80,706	57,096	70.75
KGS	107,740	71,184	66.07
MK	54,530	33,084	60.67
2KP	82,715	51,826	62.66
NBT	53,930	40,605	75.29
TMC	63,827	48,000	75.20
Total	443,448	301,795	68.10

Coverage was 68.10% in all six health zones, and as high as 75.29% in the NBT health zone. The average coverage of SMC doses in zones with one supervised outlet was very close to that of zones with three supervised outlets (68.87% ≈ 68.01%). This means that major efforts still need to be made in the organization to reach and maintain targets for full dose coverage, especially in areas with three supervised outlets.

3.2.2. Effective Coverage of SMC Treatment

Unlike the administrative data, the household survey coverage revealed the effective coverage of SMC treatment in 2023. Figure 1 below illustrates the administrative and effective coverage of children having received treatment in the six health zones.

We found that the proportion of children having benefited from the complete cycle (actual coverage surveyed in 4 passages) in all six health zones was 70.55% higher than that obtained administratively from the average of the 4 passages (digitized complete cycle coverage) 68.10%, *i.e.* a positive difference of 2.45%. This positive difference was more pronounced in four health zones, namely: BNK (28.85%), KGS (3.33%), NBT (17.11%), TMC (14.40%) and very pronounced negative deviations were observed in MK (44.47%) and 2KP (6.56%).
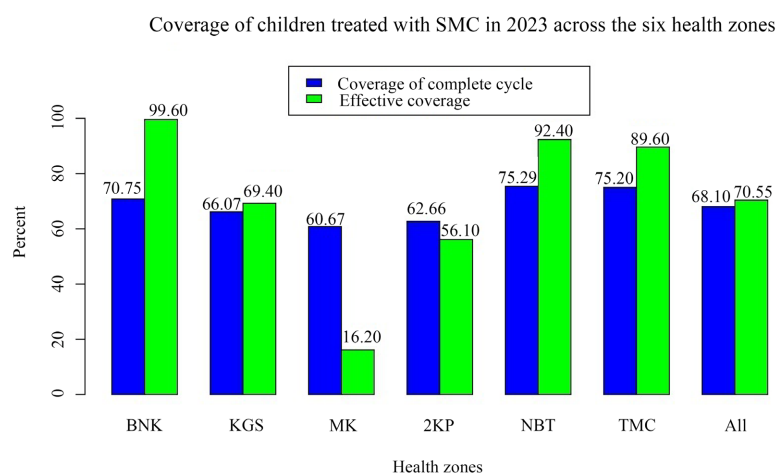

Figure 1. Administrative and effective coverage of SMC for children aged 3 - 59 months in the six health zones in 2023.

Table 2. Different aspects related to knowledge, attitudes, practices, and satisfaction according to mothers' statements in 2023.

Variables et modalités	BNK	MK	TMC	KGS	2KP	NBT	Mean
	%	%	%	%	%	%	%
Administrators explained the SMC administration protocol to mothers of children aged 3 to 59 months							
Explain the benefits of SMC	58.80	95.44	92.90	81.62	79.96	94.76	83.91
Helps easily to identify the target children who should receive SMC	17.50	53.71	79.09	38.39	85.92	61.14	55.96
Explains to parents how to administer the SP and AQ medications to a target child	20.68	39.69	87.66	6.30	83.28	45.37	47.16
Explains what to do in case of reactions following the administration of SP-AQ to a child	14.93	28.78	59.75	3.36	60.73	34.19	33.62
Systematically fills out the SMC card	43.53	33.53	65.88	3.03	59.61	29.03	39.10
Marks the finger of the treated child.	12.40	59.93	69.05	52.19	88.86	37.44	53.31
Marks your building to signal their visit	11.50	64.00	68.83	40.80	73.11	36.27	49.08
Community relay/administrator is in a hurry to leave	1.18	0.29	1.99	2.03	2.73	0.26	1.41
Types of Information Channels for SMC							
Community relays/administrative agents	22.38	41.16	55.79	8.50	32.37	9.46	28.28
Radio	88.35	28.39	2.53	54.30	53.52	43.93	45.17
Television/banner	0.80	0.67	0.13	0.64	0.62	9.19	2.01
Health workers in health centers	5.00	0.31	12.66	14.43	4.92	21.04	9.73
Parents/friends/neighbors	15.03	8.33	45.73	30.34	28.76	16.55	24.12
Town criers	31.83	59.14	64.95	62.28	57.05	60.08	55.89
Religious leaders/traditional or administrative authorities	1.34	14.15	9.49	14.04	5.83	7.58	8.74
other	0.00	0.23	1.28	4.87	2.88	0.00	1.54
Adherence to the SMC							
Yes	100.00	100.00	99.74	99.04	98.66	92.49	98.32
No	0.00	0.00	0.26	0.96	1.34	7.51	1.68
The child experienced at least one immediate reaction after taking the medication							
Yes	9.70	23.04	13.25	17.18	31.34	13.62	18.02
No	90.30	76.96	86.75	82.82	68.66	86.38	81.98
Acceptability of the SMC							
Yes	100.00	100.00	97.63	94.20	94.87	82.07	94.79
No	0.00	0.00	2.37	5.80	5.13	17.93	5.21
	N = 488	N = 510	N = 665	N = 749	N = 628	N = 533	N = 3573

These negative and positive deviations raise the issue of the quality of monitoring of campaign implementation in the field, especially during the drug distribution phase or when data is being recorded on smartphones.

Knowledge, Attitudes, and Practices of Mothers/Guardians of Children.

According to respondents' declarations, on average 83.9% of agent-administrators had explained the benefits of SMC, 55.96% had helped identify targets, 33.62% had taught what to do in the event of adverse events, 47.16% had explained how to give the child the medication, 39.10% had systematically filled in the cards after administering the treatment, 49.1% had marked buildings to indicate their passage and 53.3% had marked the finger of the treated child.

Table 2 shows the different aspects of knowledge, attitudes and practices as reported by respondents.

Whatever the health zone, the main sources of information for mothers/guardians about SMC were town criers (55.9%), community radios (45.2%), community relays (28.3%), followed by relatives (24.1%) in the six health zones. 98.3% of mothers had accompanied the implementation of SMC, with an acceptability level of 94.8%.

The reasons for non-acceptance were related to adverse effects during the SMC campaign in 18.02% of cases.

3.3. Factors Associated with SMC Treatment Coverage

In univariate analysis, age of child (p = 0.01), age of respondent (p < 0.01), education level (p = 0.000) and type of SMC strategy were associated with effective SMC coverage.

Factors explaining complete 12-dose SMC coverage were respondent age, respondent education level and strategy type.

Table 3. Univariate and multivariate analysis of factors explaining complete coverage of the 12 doses of SMC in the six health zones in 2023.

Variables and Modalities	Complete cycle (12 doses)				
	No	Yes	Crude OR (CI 95%)	p-value	Adjusted OR (CI 95%)
	n1 (%)	n2 (%)			
Information about the child					
Age (month)					
03 - 11	286 (20.86)	386 (17.53)	1	-	
12 - 59	1085 (79.14)	1816 (82.47)	1.2 (1.1 - 1.5)	0.01	
Sex					
Male	755 (55.1)	1191 (54.1)	1	-	
Female	616 (44.93)	1011 (45.91)	1.1 (0.9 - 1.19)	0.57	
Place of residence					
Urban	917 (66.89)	1474 (66.94)	1	-	
Rural	454 (33.11)	728 (33.06)	0.99 (0.86 - 1.1)	0.50	

Continued

Information about the respondent						
Age (years)						
[15 – 25[	157 (11.45)	296 (13.44)	1	-	1	
[25 – 50[	1146 (83.59)	1767 (80.25)	0.73 (0.60 - 0.90)	<0.01	0.79 (0.64 - 0.97)	
50 & other	68 (4.96)	139 (6.31)	1.2 (0.84 - 1.73)	0.32	1.36 (0.93 - 1.98)	
Sex						
Male	654 (45.57)	987 (46.18)	1	-		
Female	781 (54.43)	1150 (53.82)	0.98 (0.85 - 1.12)	0.72		
Type of relationship with the child						
Perents	1135 (82.79)	1899 (86.24)	1	-		
Other	236 (17.21)	304 (13.76)	0.78 (0.64 - 0.93)	0.56		
Level of education						
None	1034 (72.00)	1314 (61.47)	1	-	1	
Literate	49 (3.41)	27 (1.28)	0.44 (0.27 - 0.70)	<0.01	0.39 (0.24 - 0.64)	
Primary	205 (14.25)	420 (19.65)	1.6 (1.3 - 1.9)	<0.01	1.43 (1.17 - 1.73)	
Secondary	126 (8.81)	341 (15.95)	2.1 (1.7030 - 2.6)	<0.01	2.02 (1.61 - 2.53)	
Higher	22 (1.53)	35 (1.64)	1.2 (0.7 - 2.1)	0.40	1.40 (0.82 - 2.42)	
marital status						
Single	72 (5.05)	95 (4.46)	1	-		
Married	1254 (87.36)	1864 (87.19)	1.1 (0.8 - 31.5)	0.44		
Cohabitation /common-law marriage	77 (5.38)	117 (5.45)	1.8 (0.75 - 1.2)	0.52		
Widowed	29 (2.02)	54 (2.52)	1.4 (0.8 - 2.5)	0.22		
Divorced	3 (0.19)	8 (0.39)	2.3 (0.6 - 9.2)	0.25		
Types of strategies						
Three supervised doses	207 (14.43)	610 (28.55)	1	-	1	
One supervised dose	839 (58.46)	1070 (50.09)	0.44 (0.36 - 0.52)	<0.01	0.44 (0.37 - 0.53)	
Community health (One supervised dose)	389 (27.11)	456 (21.36)	0.39 (0.32 - 0.49)	<0.01	0.41 (0.33 - 0.51)	
C.I. : Confidence Interval; OR : Odds Ratio						

Indeed, children whose respondents were aged between 25 and 50 had a lower probability of OR = 0.79 of receiving all four cycles of SMC compared with children whose respondents were aged under 25 (p = 0.02). In addition, children

whose respondents had primary (OR = 1.43; p < 0.01) and secondary (OR = 2.02; p < 0.01) education had a higher probability of receiving a full dose of SMC compared to children whose respondents had no education. Finally, the strategies "one supervised catch without community health worker", and "one supervised catch with community health" offered a lower probability respectively (OR = 0.44; p < 0.01) and (OR = 0.41; p < 0.01) of receiving full coverage compared to the strategy "three supervised catches with community health" (Table 3).

According to the Hosmer-Lemeshow test, the proportional hazards hypothesis was verified (p = 0.8678). The final model was adequate, as the p-value obtained was greater than (5%). The set of variables in the final model explained 86.78% of effective SMC coverage.

4. Discussion

It's very important that people who receive medication, including malaria preventive drugs, use them in accordance with what they've been told by healthcare providers.

Mothers/caregivers are satisfied with the chemoprevention of seasonal malaria. This satisfaction can be explained by the good coverage rate (proportion of children having received the full treatment during the 4 visits) and treatment compliance observed from one health zone to another. Factors such as the age of the child, the age of the respondent, the level of education, the type of strategy, the mobilization of the community itself, the involvement of the town criers and the integration of the child's unique identifier into the system are determining factors in satisfaction with the SMC campaign. It is therefore clear that we need to focus on raising awareness, defining children's eligibility criteria and involving all local players in the acceptance of the intervention through information channels adapted to the context of each intervention zone. The average administrative coverage rate for the six health zones in our study and those observed per health zone in this study are lower than those of El hadj *et al.* in 2018 in Senegal, which was 92.07% [9]. Similarly, data from the household survey indicate an average coverage of all six health zones (70.55%) lower than that of I. Salissou *et al.* in 2016 in Niger [10], who reported coverage of 81.3%. These low average coverages observed could be explained by the absence of target mothers or children in households during SMC, inadequate communication, the type of strategy and side effects, which were the main reasons for non-participation in SMC programs. Mothers' non-participation may also be due to the importance attached by children's parents to field work during the rainy season.

Reasons for non-acceptance of SMC related to adverse effects were observed in a lower proportion compared to the study by S. Diop *et al* in Senegal in 2017 where reasons for non-administration were dominated by side effects at 57.6% [11]. Efforts must be sustained to encourage and urge parents of guardians to be present with their children when the dispensing agents pass by. In order to achieve a good rate of participation by mothers in the campaign, it is necessary

to maintain the communication methods used for this purpose by intensifying them in the areas least affected by this finding on the one hand, and to strengthen the SMC teams to conduct good communication and reach all targets.

In terms of treatment coverage, children aged 12 to 59 months are the most representative of those who received full treatment. Overall, treatment completeness rates according to the household survey (as a whole) are higher than those found by Paul Milligan in 2020 according to the study conducted in selected African countries after five years of SMC implementation where he reported that respectively 54.5% and 53.0% of eligible children received all four treatments in 2015 and 2016 [12]. Nonetheless, efforts must be continually invested to ensure that all children receive the full course of treatment for future SMC campaigns, particularly in villages with low completion rates.

However, socio-demographic characteristics, knowledge of SMC, integration of the unique identifier, good population practices and the type of strategy would better explain effective coverage (complete treatment) of SMC. Observed factors such as the age of the child, the age of the child's mother, the child's mother's high level of education, perfect knowledge of SMC and the type of strategy adopted are determining factors in effective SMC coverage. These findings concur with those of S. Diop *et al.* in 2017 in Senegal, where it was shown that perfect knowledge of SMC and the marriage status of mothers are associated with adequate therapeutic coverage [11]. Given these facts, it is clear that awareness-raising and communication must be stepped up to ensure that populations adhere to campaigns, depending on the context of each intervention zone. Improving the educational level of mothers and monitoring the administration of doses of medicines in households must be a priority.

The SMC coverage achieved reflects the level of adherence of mothers/caregivers. Adherence remains a determining factor in the implementation of SMC as mentioned by the results of Samuel Chatio *et al.* in 2019 in Ghana [13]. This finding attests to good acceptability of SMC drugs by mothers of children. Information channels during the SMC campaign are community relay agents, town criers and community radios. These same channels were reported by I. Salissou *et al.* in 2016 in Niger [10], who found that the main information channel was community health agents (83.4%), including community relays.

The majority of mothers/caregivers had a very good grasp of the national SMC protocol (the benefits of SMC) and the expected effects. This observation may be due to the awareness campaigns conducted over three years by the Ministry of Health through the PNLP and its partners. The ACCCESS-SMC-Survey study [14] carried out in Niger found that 90.3% of mothers/caregivers knew about SMC, which is higher than our rate. The mothers' level of knowledge in our study could be explained by their low level of education and their place of residence. This makes it difficult for them to access the various sources of communication and information.

In view of the results obtained, factors such as knowledge, attitude, practice, medication side-effects and the source of health information concerning the ap-

propriate use of medication favor good acceptance of the SMC program among mothers/caregivers. However, for better adherence to SMC, a communication plan adapted to the approach used needs to be reinforced. Acceptance is proportional to SMC uptake in 2023 in each of the health zones.

5. Conclusion

Chemoprevention of seasonal malaria is accepted by mothers/caretakers of children because of its beneficial effects. This acceptance is marked by strong adherence, as demonstrated by the coverage rates of eligible children. It is important that communication is maintained at grassroots level with local players, *i.e.* administrators, community relays, relatives/friends and local health workers. It would be important to conduct further studies on adverse effects, and also to assess the impact of SMC campaigns on malaria incidence in areas with high malaria transmission.

Authors' Contributions

All authors have equally contributed to the conduct of this work and have read and approved the final version

Conflicts of Interest

The authors declare no conflicts of interest.

References

[1] Pemberton-Ross, P., Smith, T.A., Hodel, E.M., Kay, K. and Penny, M.A. (2015) Age-Shifting in Malaria Incidence as a Result of Induced Immunological Deficit: A Simulation Study. *Malaria Journal*, **14**, Article No. 287. https://doi.org/10.1186/s12936-015-0805-1

[2] World Health Organisation (2022) World Malaria Report 2019: WHO Global Malaria Programme. World Health Organization, Geneva, 2022.

[3] Ajakaye, O.G. and Ibukunoluwa, M.R. (2019) Prevalence and Risk of Malaria, Anemia and Malnutrition among Children in IDPs Camp in Edo State, Nigeria. *Parasite Epidemiol Control*, **8**, Article e00127. https://doi.org/10.1016/j.parepi.2019.e00127

[4] Mvumbi, P.M., Musau, J., Faye, O., Situakibanza, H. and Okitolonda, E. (2019) Adherence to the Referral Advice after Introduction of Rectal Artesunate for Pre-Referral Treatment of Severe Malaria at the Community Level: A Noninferiority Trial in the Democratic Republic of the Congo. *Malaria Journal*, **18**, Article No. 438. https://doi.org/10.1186/s12936-019-3074-6

[5] Organisation Mondiale de la Santé (2019) Le paludisme chez les enfants de moins de cinq ans. https://web.archive.org/web/20181031204800/http://www.who.int:80/malaria/areas/high_risk_groups/children/fr/

[6] Institut National de la Statistique et de l'Analyse Economique (INSAE) (2017-2018) Cinquième enquête démographique de Santé du Bénin (EDSB-V). 208p. https://instad.bj/images/docs/insae-statistiques/enquetes-recensements/EDS/2017-2018/1.Benin_EDSBV_Rapport_final.pdf

[7] Organisation Mondiale de la Santé (OMS) (2019) Recommandation de politique

générale de l'OMS: Chimio prévention du paludisme saisonnier pour lutter contre le paludisme à Plasmodium falciparum en zone de forte transmission saisonnière dans la sous-région du Sahel en Afrique.
https://web.archive.org/web/20220119131944/http://www.who.int/malaria/publications/atoz/smc_policy_recommendation_fr_032012.pdf?ua=1

[8] Organisation Mondiale de la Santé (2019) Chimio Prévention du paludisme Saisonnier (SMC).
https://iris.who.int/bitstream/handle/10665/372840/9789240078475-fre.pdf?sequence=1

[9] Bâ, E.H., Pitt, C., Dial, Y., Faye, S.L.,Cairns, M., Faye, E., *et al.* (2018) Implementation, Coverage and Equity of Large-Scale Door-to-Door Delivery of Seasonal Malaria Chemoprevention (SMC) to Children under 10 in Senegal 2018. *Scientific Reports*, **8**, Article No. 5489. https://www.ncbi.nlm.nih.gov/pubmed/29615763
https://doi.org/10.1038/s41598-018-23878-2

[10] Salissou, I., Moustapha, L.M., Yerima, B., Alkassoum, I., Hadiza, D. and Ibrahim, M.L. (2016) Perception de la chimioprévention du paludisme saisonnier au Niger. *International Journal of Biological and Chemical Sciences*, **10**, 2710-2715.
https://doi.org/10.4314/ijbcs.v10i6.24

[11] Diop, S., Kaly, J., Lawson, D., Diop, M. and Diop, B. (2017) Connaissances, attitudes et pratiques des mères ou gardiennes d'enfants sur la chimioprévention du paludisme saisonnier au Sénégal 2017. 18es Journées Nationales d'Infectiologie. *Médecine et maladies infectieuses*, **47**, S95-S100.

[12] ACCESS-SMC Partnership (2020) Effectiveness of Seasonal Malaria Chemoprevention at Scale in West and Central Africa: An Observational Study. *Lancet*, **396**, 1829-1840.

[13] Chatio, S., Ansah, N.A., Awuni, D.A., Oduro, A. and Ansah, P.O. (2019) Community Acceptability of Seasonal Malaria Chemoprevention of Morbidity and Mortality in Young Children: A Qualitative Study in the Upper West Region of Ghana. *PLOS ONE*, **14**, e0216486. https://doi.org/10.1371/journal.pone.0216486

[14] Speak Up Africa (SUA) (2016) Rapport de l'évaluation de l'acceptation de la chimioprévention du paludisme saisonnier au Niger. Achieving Catalytic Expansion of Seasonal Malaria Chemoprevention in the Sahel. ACCCESS-SMC-Enquête-CAP-Rapport-Niger.
https://www.speakupafrica.org/wp-content/uploads/2018/12/ACCESS-SMC-Enque%CC%82te-CAP-Rapport-Niger.pdf