

Original research article

Assessment of Seasonal Malaria Chemoprevention (SMC) Knowledge and Acceptability in Children between 3-59 Months Living in North Cameroon: A Cross-sectional Study

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ABSTRACT

Malaria is a significant challenge in sub-Saharan Africa, especially in Cameroon, where children under 5 years of age are disproportionately affected. The WHO recommends seasonal malaria chemoprevention (SMC) for children aged 3-59 months in areas of high seasonal transmission. Conducted in northern Cameroon from December 2021 to June 2022, this cross-sectional study aimed to assess SMC acceptability among parents of children under 5. Structured questionnaires collected data from 58 households on sociodemographic, malaria and SMC knowledge, insecticide-treated net (ITN) utilization, child malaria positivity, and SMC acceptability. Logistic regression identified predictors of SMC acceptability. Respondents from 58 households, mostly with secondary education, showed high awareness of malaria and SMC and good preventive knowledge. ITN utilization varied. A total of 68.97% of the children tested for malaria were negative. Overall, 67.24% accepted SMC, with education and SMC knowledge as significant predictors. This study highlights the acceptability of SMC among parents of children under 5 in northern Cameroon. Achieving full SMC coverage and adherence remains challenging despite widespread awareness. Considering factors such as education and SMC knowledge, targeted interventions are crucial for reducing the malaria burden in this vulnerable population.

Keywords: Malaria, Seasonal Malaria chemoprevention, Cameroon, Children under 5. Acceptability.

RÉSUMÉ

Le paludisme constitue un défi majeur en Afrique subsaharienne, en particulier au Cameroun, où les enfants de moins de 5 ans sont touchés de manière disproportionnée. L'OMS recommande la chimioprévention saisonnière du paludisme (CSP) pour les enfants âgés de 3 à 59 mois dans les zones à forte transmission saisonnière. Menée dans le Nord du Cameroun de décembre 2021 à juin 2022, cette étude transversale visait à évaluer l'acceptabilité de la CSP auprès des parents d'enfants de moins de 5 ans. Des questionnaires structurés ont permis de recueillir des données auprès de 58 ménages, notamment les caractéristiques sociodémographiques, les connaissances relatives au paludisme et à la CSP, l'utilisation des moustiquaires imprégnées d'insecticide (MI), la prévalence du paludisme chez les enfants et l'acceptabilité de la CSP. Une régression logistique a permis d'identifier les facteurs prédictifs de l'acceptabilité de la CSP. Les personnes interrogées issues de 58

ménages, pour la plupart ayant suivi des études secondaires, ont fait preuve d'une forte sensibilisation au paludisme et à la CSP, ainsi que de bonnes connaissances en matière de prévention. L'utilisation des MII était variable. Au total, 68,97 % des enfants testés pour le paludisme se sont révélés négatifs. Globalement, 67,24 % des parents acceptaient la CSP; le niveau d'éducation et les connaissances sur cette approche constituant des facteurs prédictifs significatifs. Cette étude met en évidence l'acceptabilité de la CSP chez les parents d'enfants de moins de 5 ans. Atteindre une couverture et une observance complètes de la CSP reste un défi malgré une sensibilisation généralisée. Compte tenu de facteurs tels que le niveau d'éducation et les connaissances sur cette intervention, des actions ciblées sont essentielles pour réduire le fardeau du paludisme au sein de cette population vulnérable.

Mots-clés: Paludisme, chimioprévention saisonnière contre le paludisme, Cameroun, enfants de moins de 5 ans, acceptabilité.

1. BACKGROUND

Malaria remains the leading cause of medical consultations in Cameroon (Nsah *et al.* 2025). According to the WHO, at the end of 2025, it remains a serious challenge for global health. In 2024, an estimated 282 million new cases of malaria were reported in 80 countries where the disease is endemic, compared to 273 million in 2023 and 230 million in 2015 (WHO 2025). In the same year, the WHO African Region remained the most affected, with 94% of cases and 95% of deaths worldwide, and 75% of deaths in this region affecting children under 5 years of age (WHO 2025). The region carries a disproportionately high share of the global malaria burden. The highest burden of malaria is borne by 11 countries, including Cameroon (WHO 2024). In Cameroon, the entire population is exposed to malaria, and for this reason, this disease is highly endemic. According to the National Surveillance Report, every year, Cameroon registers approximately 6 million cases of malaria, and health facilities record approximately 4000 deaths, most of which occur in children younger than 5 years of age (WHO 2022). However, not all cases and deaths are recorded, and the WHO estimates that approximately 11,000 people die from malaria in Cameroon every year. Approximately 30% of all outpatient visits to healthcare facilities are for malaria, making it a disease of great importance in Cameroon (WHO 2022, Nsah *et al.* 2025). Between January and September 2025, some 2,128,394 confirmed malaria cases were reported in health facilities and by community health workers, which represents a morbidity of 25.9%. The incidence rate rose slightly compared to the same period in 2024, from 95.2% to 96% (PNLP 2025b). These figures represent a significant decrease compared to 2021, when proportional morbidity was 30.3% and proportional mortality stood at 13.5% (PNLP 2025a). Children aged under five years are among the most vulnerable to malaria or serious consequences of the disease, especially in regions where transmission is intense (Mbishi *et al.* 2024). This is because they have not yet developed immunity to malaria (CDC 2024). It is important to note that a child under 5 dies of malaria almost every minute (UNICEF 2022). In 2024, in Cameroon, the proportional morbidity related to malaria in children under 5 years of age was 36.8%, for a proportional mortality of 20.3% (PNLP 2025b).

To prevent malaria infection in children under five years of age, one recommendation from WHO is the use of seasonal malaria chemoprevention (SMC) (WHO 2012). SMCs aim to administer antimalarial drugs to children aged 03-59 months regardless of whether they are infected, during the high transmission period, to protect them against malaria and reduce malaria-related morbidity and mortality. This intervention is effective, cost-effective, safe, and feasible for the prevention of malaria among children less than 5 years of age in areas with highly seasonal malaria transmission (WHO 2012).

The Cameroon government started implementing the SMC in 2016. In Cameroon, this administration is carried out in the northern and far northern regions, which are most affected and characterized by seasonal transmission throughout 4 to 6 months (especially during periods of heavy rains that spread from July to October) (Minsante 2019). The approach is based on the intermittent administration of a full course of antimalarial treatment during the high transmission season (rainy season) to prevent illness (PNLP 2025a). The goal is to maintain therapeutic levels of the antimalarial drug in the bloodstream during the high-risk period of malaria infection (PNLP 2025a). In practical terms, this consists of administering four to five monthly cycles of sulfadoxine-pyrimethamine (SP) combined with amodiaquine (AQ) in health districts located in the North and Far North regions (PNLP 2025a). Despite concerted efforts by Cameroon's NMCP, achieving full coverage of children under 5 years old with SMC remains elusive. According to the NMCP's 2021 annual report, declaration-based coverage was reported at 93.5%, whereas coverage supported by documented proof was significantly

lower at 65%. Similarly, adherence to Seasonal Malaria Chemoprevention (SMC) reached 91.4% based on declarations, but only 48% when verified with supporting evidence (PNLP 2023). These statistics underscore the pressing need for a comprehensive evaluation of the acceptability of SMC among parents of children aged 3 to 59 months in the northern region of Cameroon. The significant gaps in coverage and adherence highlighted by the NMCP emphasize the urgency of understanding why these gaps persist despite ongoing efforts. By identifying the factors associated with the acceptability of SMC, this study aims to provide valuable insights that can inform targeted interventions to improve uptake and adherence rates. Ultimately, enhancing the acceptability of SMC is essential for maximizing its impact on reducing the malaria burden in the target population.

2. MATERIALS AND METHODS

To achieve our objective, we conducted a cross-sectional study with an analytical focus using a semi-structured questionnaire in the Ouro Kanadi health area, located in the Garoua 1 health district. This area was selected through a multi-stage random process as part of a larger national malaria study. Initially, five of Cameroon's ten administrative regions were randomly selected, considering feasibility, accessibility, and security. In each region, one health district and then one health area were randomly chosen. The final five health areas included Fiala-Foréké (West), Ahala 1 (Centre), Kye-Ossi (South), Akwa 1 (Littoral), and Garoua-Windé (North). However, as Seasonal Malaria Chemoprevention (SMC) is only implemented in the North and Far North regions, we focused specifically on the Garoua-Windé area for this SMC-related study.

A two-stage cluster sampling method was used. In the first stage, Enumeration Areas (EAs) were randomly selected. In the second stage, a fixed number of households were randomly drawn within each EA. Sampling weights were calculated using the selection probabilities at each level to produce weighted estimates.

The total sample size was calculated using R software (v4.1.2), based on a malaria morbidity rate of 29.6% (2021), a 5% margin of error, a design effect of 2, and a non-response rate of 11%, leading to a target of 1421 households across 64 EAs (PNLP 2022). Proportionally, 91 households were targeted in the Garoua-Windé health area. Applying an estimated 15.7% prevalence of children under five, we expected to identify at least 14 eligible households for the study (CIS 2021).

The data were collected from the legal representatives (mother, father, and guardian) of the target children from July to October 2022. The questionnaire was meticulously designed to gather detailed information on two main aspects. First, we explored the sociodemographic and economic characteristics of the respondents, including variables such as age, gender, marital status, educational background, and household income. Second, we delved into respondents' knowledge and acceptance of seasonal malaria chemoprevention (SMC). The level of knowledge about malaria and SMC was categorized as "Good" or "Medium" based on participants' responses and on proven, scientifically approved information about the two concepts. Before data collection, ethical clearance was obtained from the National Ethics Committee for Research in the Humanities of Cameroon, with reference number: 2020/02/1212/CE/CNERSH/SP.

During our research, we also performed malaria RDTs using the RDT VIKIA Malaria Ag P.f/Pan test (Biomerieux, France) to determine the prevalence of malaria in children under 5 years of age. Children with a positive result were referred to one of the nearest health training centres for management according to national treatment guidelines.

The sampling strategy targeted parents who resided with a child under the age 5 in the specified health areas during the study period. Participation in the study was contingent upon obtaining informed consent from the respondents, ensuring adherence to ethical research principles.

Data management and analysis were conducted meticulously to ensure accuracy and reliability. Initially, the data were recorded in an Excel file, version 2016, to facilitate organization and consistency. Subsequently, the dataset was imported into R software, version 4.1.3. Quantitative variables were subjected to rigorous statistical analysis, with descriptive statistics such as the mean $\pm$ standard deviation utilized for normally distributed data and the median with interquartile range for non-normally distributed data. Qualitative variables were summarized using frequencies and percentages.

Furthermore, logistic regression analysis was employed to identify factors associated with the acceptability of seasonal malaria chemoprevention (SMC). This advanced statistical technique enabled the identification of

significant predictors influencing respondents' attitudes toward SMC, with statistical significance defined at p-values less than 5%.

3. RESULTS

3.1. Sociodemographic characteristics

During our study, we collected data from 58 households (each containing at least one child under 5 years of age) in the Ouro Kanadi health area. The results revealed diverse profiles among respondents, with a relatively balanced distribution between genders, with a slight predominance of males (53.45%) over females (46.55%) (Table 1). A significant proportion of the respondents were 21 to 30 years old (43.10%) or 31 to 40 years old (39.66%). Most respondents were either married (32.76%) or widowed (29.31%), while only a minority were single (27.59%) or divorced (10.34%) (Table 1).

In terms of education, the majority of respondents had a secondary education (43.10%), closely followed by those with a primary education (25.86%). The children under 5 years of age in the surveyed households were also representative of various age groups, with a relatively high proportion of children aged 48 to 59 months (25.86%) and 25 to 36 months (22.41%) (Table 1).

Moreover, a significant portion of the surveyed households included pregnant women (46.55%), emphasizing the importance of considering the specific needs of households with pregnant women in health interventions (Table 1).

Table 1: Sociodemographic characteristics of respondents

Variables	Options	Frequency (%)
Gender of the respondent	Female	27 (46.55)
	Male	31 (53.45)
Age of the respondent	21 to 30 years	25 (43.10)
	31 to 40 years	23 (39.66)
	41 to 50 years	3 (5.17)
	Over 50	7 (12.07)
Marital status	Single	16 (27.59)
	Cohabiting	0 (0)
	Divorced	6 (10.34)
	Married	19 (32.76)
	Widowed	17 (29.31)
Education level	Non educated	13 (22.41)
	Primary	15 (25.86)
	Secondary	25 (43.10)
	University	5 (8.62)
Age of child under 5 years old	0 to 12 months	11 (18.97)
	13 to 24 months	7 (12.07)
	25 to 36 months	13 (22.41)
	37 to 48 months	12 (20.69)
	48 to 59 months	15 (25.86)
Presence of pregnant women in the household	Yes	27 (46.55)
	No	31 (53.45)

3.2. Knowledge about malaria

The analysis of respondents' knowledge about malaria revealed several key findings. First, all respondents (100%) reported having heard about malaria, indicating widespread awareness of the disease within the surveyed population (Table 2).

Regarding the definition of malaria, the unanimous consensus (100%) categorized it as a parasitic disease, reflecting a clear understanding of its etiology among respondents (Table 2).

Furthermore, all respondents (100%) correctly identified mosquitoes as the vector responsible for malaria transmission, underscoring the awareness of the primary mode of transmission.

In terms of prevention methods, respondents demonstrated varying levels of familiarity. The most commonly cited prevention methods were the use of insecticides (39.66%) and incense (43.10%), while a smaller proportion reported using insecticide-treated nets (17.24%) (Table 2).

The study also identified vulnerable groups, with children under 5 years old being perceived as the most vulnerable (48.28%), followed by pregnant women (27.59%) and a combination of pregnant women and children under 5 (24.14%) (Table 2).

Overall, the majority of respondents were categorized as having a good level of knowledge about malaria (75.86%) (Table 2).

Table 2: Knowledge about malaria

Variables	Options	Frequency (%)
Having heard about malaria	Yes	50 (100)
	No	0 (0)
Definition of malaria	parasitic disease	58 (100)
	Contagious disease	0 (0)
	Hereditary disease	0 (0)
	Cancer	0 (0)
	Witchcraft	0 (0)
Malaria vector	Fly	0 (0)
	Mosquito	58 (100)
	Bee	0 (0)
Time of day of the bite	Morning	0 (0)
	Evening	58 (100)
	Between sunset and sunrise	0 (0)
Prevention methods	Insecticide-treated net	10 (17.24)
	PID	0 (0)
	Insecticide	23 (39.66)
	Incense	25 (43.10)
Groups vulnerable to malaria	Children under 5	28 (48.28)
	Pregnant women	16 (27.59)
	Pregnant women and children under 5	14 (24.14)
	Elderly people	0 (0)
	Other	0 (0)
Level of knowledge about malaria	Low level	0 (0)
	Medium level	14 (24.14)
	Good level	44 (75.86)

3.3. Knowledge about seasonal malaria chemoprevention (SMC)

Concerning knowledge about seasonal malaria chemoprevention (SMC), all respondents (100%) reported having heard about SMC, indicating widespread awareness of this intervention within the surveyed population.

Regarding the timing of SMC administration during campaigns, the majority of respondents (89.66%) correctly identified the rainy season as the appropriate time for SMC administration, aligning with campaign schedules (Table 3).

The recommended number of doses for SMC was well understood by respondents, with the majority (63.79%) recognizing the need for three doses. Health personnel were overwhelmingly identified as the primary administrators of the first dose (100%), while parents were primarily responsible for administering doses 2 and 3 (84.62%) (Table 3).

The respondents demonstrated a clear understanding of the age range for SMC administration in Cameroon, with the majority (75.86%) recognizing that SMC is administered up to 59 months of age (Table 3).

Concerns about the potential side effects of SMC were prevalent among respondents, with the vast majority (86.21%) acknowledging that SMC can have side effects.

Overall, respondents exhibited a high level of knowledge about SMC, with the majority (84.48%) categorized as having a good level of understanding (Table 3).

Table 3: Knowledge about seasonal malaria chemoprevention (SMC)

Variables	Options	Frequency (%)
Heard about SMC	Yes	50 (100)
	No	0 (0)
Timing of administration of SMC during campaigns	Dry season	1 (1.72)
	Rainy season	52 (89.66)
	At any time	5 (8.62)
Number of recommended doses	One dose	3 (5.17)
	two doses	18 (31.03)
	Three doses	37 (63.79)
The person in charge of administering dose 1	Health personnel	58 (100)
	Parent	0 (0)
The person in charge of administering the other doses	Health personnel	8 (15.38)
	Parent	44 (84.62)
Up to what age is SMC administered in Cameroon	12 months	3 (5.17)
	24 months	1 (1.72)
	36 months	2 (3.45)
	48 months	8 (13.79)
	59 months	44 (75.86)
Can SMC have side effects?	Yes	50 (86.21)
	No	8 (13.79)
Level of knowledge about SMC	Low level	0 (0)
	Medium level	9 (15.52)
	Good level	49 (84.48)

3.4. Insecticide-treated net (ITN) utilization among children under 5 Years old

We also assessed ITN utilization among children under 5 years old. Of the surveyed households, 84.48% reported owning at least one ITN, indicating widespread availability (Table 4). However, 15.52% lacked ITNs. Most households (75.51%) had only one ITN, while fewer had two (10.20%) or more (14.29%). ITN usage varied, with 67.24% of children sleeping under a net the previous night, while 32.76% did not (Table 4).

Table 4: Insecticide-treated net (ITN) Utilization among Children Under 5 Years Old

Variables	Options	Frequency (%)
Having at least one ITN in the household	Yes	49 (84.48)
	No	9 (15.52)
Number of ITN in the household	One	37 (75.51)
	Two	5 (10.20)
	More than two	7 (14.29)
Whether the child under 5 years old slept under the mosquito net last night	Yes	39 (67.24)
	No	19 (32.76)

3.5. Malaria positivity among children under 5 years of age

To assess malaria positivity among children under 5 years old, we conducted rapid diagnostic tests (RDTs) among children in the surveyed households. From the tests conducted, we found that 68.97% had negative RDT results, indicating the absence of malaria infection, while 31.03% tested positive for malaria (Table 5).

Table 5: Malaria positivity among children under 5 years of age

Variables	Options	Frequency (%)
RDT results for the child under 5 years old	Negative	40 (68.97)
	Positive	18 (31.03)

3.6. Acceptability of SMC

Regarding the acceptability of SMC by parents of children under 5 years old, 67.24% of respondents expressed acceptance of SMC, while 32.76% reported non-acceptance (Table 6).

Table 6: Acceptability of the SMC

Variables	Options	Frequency (%)
Acceptability of SMC	Yes	39 (67.24)
	No	19 (32.76)

3.7. Factors associated with SMC acceptability

The analysis of factors associated with the acceptability of SMC revealed that, in the univariate analysis, gender significantly influenced acceptance. Males exhibited lower odds of accepting SMC than females did (OR: 0.27, CI 95%: 0.10-0.87, $p = 0.02837$). Additionally, education level emerged as a significant predictor, with respondents with a secondary education level showing greater odds of accepting SMC than those who had no level of education (OR: 8.4, CI95%: 1.91-44.10, $p = 0.0069$) (Table 7).

In the multivariate analysis, education level continued to show significance, with respondents having a secondary education level (OR: 7.96, CI95%: 1.54-10.56, $p = 0.0173$) and a medium level of knowledge about SMC (OR: 10.73, CI95%: 1.88-13.97, $p = 0.0139$) demonstrating greater odds of accepting SMC compared to their respective reference groups (Table 7).

A chi-square test was conducted to assess the association between the acceptability of the SMC and RDT results among children under 5 years old. The results revealed a significant association (P -value < 0.05).

Among children with negative RDT results, the majority (85.0%) were from households where SMC was accepted, while a smaller proportion (15.0%) were from households where SMC was not accepted. Conversely, among children with positive RDT results, a smaller percentage (27.8%) were from households where SMC was accepted, while the majority (72.2%) were from households where SMC was not accepted.

4. DISCUSSION

The implementation of seasonal malaria chemoprevention (SMC) has shown significant efficacy in providing individual protection against clinical malaria, particularly among children aged 3-59 months residing in regions with high malaria transmission rates (Cairns *et al.* 2021).

Our study, which was conducted in the northern region of Cameroon during the peak rainy season (July to October), echoes previous research findings. For instance, Apinjoh *et al.* (2015) highlighted the heightened vulnerability of children born during this period to malaria episodes (Malone *et al.* 2017). Their study, which focused on children's susceptibility to malaria in the Southwest Region of Cameroon, demonstrated a greater risk (P value=0.039) of malaria episodes among those born during the rainy season (Malone *et al.* 2017).

Similarly, in Cameroon, SMC is deployed in the Northern and Far North Regions during heavy rainfall from July to October, coinciding with malaria outbreaks among children under five years of age (Malone *et al.* 2017, Cairns *et al.* 2021). SMC has a significant impact on reducing malaria cases. Notably, it reduced the incidence of severe malaria among children under 5 years old in various countries, including Burkina Faso (Kirakoya-Samadoulougou *et al.* 2022), Guinea (Bisanzio *et al.* 2024), Mali (Diawara *et al.* 2022; Konate *et al.* 2023), Nigeria (De Cola *et*

al. 2022), Benin (Affoukou *et al.* 2024), Mozambique (Wharton-smith *et al.* 2021) and Togo (Bakai *et al.* 2022). However, the extent of this reduction was contingent upon the frequency of rounds of chemoprevention administration.

Table 7: Factors associated with the acceptability of SMC

Variables	cOR (CI,95%)	P-value	Global P-value	aOR (CI,95%)	P-value	Global P-value
Gender of the respondent						
Female	1		0.02837*	1		0.2292
Male	0.27 (0.10-0.87)	0.02837*		0.43 (0.09-1.70)	0.2292	
Age of the respondent						
22 to 30 years	1		0.3576	-	-	-
31 to 40 years	2.03 (0.57-7.79)	0.281		-	-	
41 to 50 years	1.13 (0.09-11.23)	0.927		-	-	
Over 50	0.42 (0.07-2.32)	0.321		-	-	
Marital status						
Single	1		0.9943	-	-	-
Divorced	0.90 (0.12-8.15)	0.926		-	-	
Married	0.98 (0.22-4.17)	0.983		-	-	
Widowed	0.83 (0.18-3.58)	0.806		-	-	
Education level						
No level of education	1		0.0311*	1		0.0413*
Primary	2.4 (0.53-11.69)	0.2594		1.89 (0.36-9.35)	0.4486	
Secondary	8.4 (1.91-44.10)	0.0069*		7.96 (1.54-10.56)	0.0173*	
University	6.4 (0.69-6.29)	0.1391		3.76 (0.37-8.11)	0.303	
Presence of pregnant women in the household						
No	1		0.6351	-	-	-
Yes	1.31 (0.43-4.05)	0.6351		-	-	
Level of knowledge about malaria						
Good	1		0.2869	-	-	-
Medium	0.47 (0.09-1.80)	0.2869		-	-	
Level of knowledge about SMC						
Good	1		0.0023*	1		0.0139*
Medium	10.79 (2.26-10.43)	0.0023*		10.73 (1.88-13.97)	0.0139*	
ITN possession						
No	1		0.1238	-	-	-
Yes	3.12 (0.73-14.32)	0.1238		-	-	
Number of ITN in the household						
One	1		0.533	-	-	-
Two	1.92 (0.24-9.74)	0.5778		-	-	
More than two	2.88 (0.42-7.61)	0.3517		-	-	
Whether the child under 5 years old slept under the mosquito net last night						
No	1		0.2942	-	-	-
Yes	1.85 (0.58-5.88)	0.2942		-	-	
cOR=Crude Odds Ratios; aOR = Adjusted Odds Ratio; *=P-value<0.05						

cOR=Crude Odds Ratios; aOR = Adjusted Odds Ratio; *=P-value<0.05

Our study provides valuable insights into the sociodemographic characteristics of households in the Ouro Kanadi health area regarding malaria prevention and control strategies. The nearly balanced gender distribution among respondents, with a slight male predominance (53.45%), reflects the inclusivity of our sample. This distribution contrasts slightly with that observed by Yolande *et al.* in 2023, where females accounted for a greater proportion (57%) of respondents, with children aged 2-3 years being most prevalent in households (Yolande *et al.* 2023).

The widespread awareness of SMC among respondents in our study indicates the effectiveness of community health education initiatives. The accurate identification of the rainy season as the optimal period for SMC administration underscores the importance of aligning interventions with local climatic conditions. Additionally, understanding dosing regimens and administration responsibilities suggests readiness for program implementation. Concerns about potential side effects highlight the importance of comprehensive counselling to address misconceptions and promote adherence. The high level of knowledge about SMC among respondents indicates strong community support for this preventive strategy, slightly surpassing the findings of Yolande *et al.* in their 2023 study (Yolande *et al.* 2023).

Education level (P value=0.0413) and parents' knowledge of SMC (P value=0.0139) were the only statistically significant parameters associated with SMC acceptance among the population. Respondents with a secondary level of education demonstrated significantly greater odds of accepting SMC than those who were not educated, highlighting the critical role of education in shaping health-related behaviors and decision-making processes. Moreover, the association between a moderate level of knowledge about SMC and greater odds of acceptability underscores the importance of health literacy in promoting community uptake of preventive interventions. These results are timely, as few studies have investigated factors associated with the success of this innovative strategy, contributing to the proposal of new malaria control strategies during epidemic seasons (Nikiema *et al.* 2022).

Rapid diagnostic test (RDT) results were significantly correlated with exposure to malaria chemoprevention in children under 5 years of age ($P < 0.05$). Specifically, 85% of the negative RDT results were from households that accepted chemoprevention. Similarly, several studies have provided compelling evidence of a subsequent reduction in the positivity rate of malaria RDT results during repeated SMC administration campaigns (Cissé *et al.* 2016, De Cola *et al.* 2022, Konate *et al.* 2023).

The significant correlation between RDT results and SMC acceptability underscores the effectiveness of chemoprevention in reducing the malaria burden among children under 5 years old. The greater proportion of negative RDT results among households accepting SMC indicates the protective effect of this intervention. Conversely, the lower acceptance of SMC among households with positive RDT results highlights the need for targeted interventions to address barriers to uptake, particularly among high-risk populations. These findings underscore the importance of integrating SMC into comprehensive malaria control programs to maximize its impact on disease prevention.

While the use of chemoprevention has demonstrated positive outcomes in malaria control, the emergence of resistance to various therapeutic components over time presents a challenge. However, practical considerations such as the prevalence patterns of resistance markers can help guide policy recommendations (Plowe 2022).

5. CONCLUSION

In conclusion, our study provides critical insights into the acceptability of seasonal Malaria chemoprevention (SMC) among parents of children under 5 years of age in the northern region of Cameroon. Despite concerted efforts by the National Malaria Control Program, achieving full coverage and adherence to SMC remains challenging. Our findings underscore the pressing need for targeted interventions to improve uptake and adherence rates, ultimately enhancing the effectiveness of SMC in reducing the burden of malaria.

The study revealed a high level of awareness and positive attitudes toward SMC among respondents, reflecting the success of community health education initiatives. Factors such as education level and knowledge about SMC emerged as significant predictors of acceptability, highlighting the critical role of health literacy in shaping behaviours and decision-making processes.

Furthermore, the association between RDT results and SMC acceptability underscores the effectiveness of chemoprevention in reducing the malaria burden among children under 5 years of age. Integrating SMC into comprehensive malaria control programs is crucial for maximizing its impact on disease prevention.

Overall, our study contributes valuable insights that can inform evidence-based strategies to enhance the acceptability and effectiveness of SMC, ultimately advancing malaria control efforts in Cameroon and beyond.

6. LIMITATIONS

Our study had some limitations, notably the final sample size, which remains small and does not ensure greater accuracy in estimating the results obtained after analysis. Next, there is the level of knowledge about both

malaria and SMC, whose categorisation process did not take into account standardised scores, but rather our subjectivity and the scientific knowledge available on the topics. We can also note the information biases (deliberate omission, forgetfulness or lies) raised by some parents, particularly regarding the time of day when the mosquito bit their child.

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