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# Community Acceptance of Seasonal Malaria Chemoprevention in the Prevention of Malaria in Kano State, Nigeria.

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## Abstract

*Seasonal malaria chemoprevention (SMC) is an important malaria-control intervention designed to protect children living in areas where malaria transmission is highly seasonal. The effectiveness of SMC depends not only on the pharmacological efficacy of the medicines but also on community acceptance, caregiver adherence, trust in medicine distributors, and the quality of programme communication. This paper examines community acceptance of SMC for malaria prevention in Kano State, Nigeria. The study adopts a qualitative empirical research perspective and synthesizes evidence concerning caregivers' attitudes, knowledge, perceived effectiveness, concerns about adverse effects, trust in community drug distributors (CDDs), delivery preferences, and the role of community-based actors. Evidence indicates that SMC is generally well accepted in Kano communities and is perceived by many caregivers as beneficial in reducing malaria episodes and household expenditure on malaria treatment. However, acceptance is not universal. Concerns about side effects, inadequate understanding of the preventive purpose of SMC, doubts about free medicines, medicine shortages, and occasional negative interactions with distributors may reduce uptake. Evidence from Kano also indicates that community-based actors, including lead mothers, can facilitate acceptance by strengthening communication and trust between households and SMC implementers. The paper concludes that sustained community acceptance requires culturally appropriate health education, reliable medicine supplies, respectful door-to-door delivery, stronger involvement of community leaders and local women, and continuous monitoring of adverse events and caregiver concerns.*

**Keywords:** Seasonal malaria chemoprevention, community acceptance, malaria prevention, Kano State, Nigeria, caregivers, community drug distributors, SP+AQ

## 1. Introduction

Malaria remains one of the most important public-health challenges in sub-Saharan Africa. Children under five years of age are particularly vulnerable to severe disease and malaria-related mortality. In areas where malaria transmission is concentrated in the rainy season, preventive interventions that provide protection during the period of greatest risk are particularly important.Seasonal malaria chemoprevention (SMC) is the administration of a full therapeutic course of antimalarial medicine at monthly intervals during the malaria-transmission season to children at increased risk of severe malaria. The intervention is generally delivered regardless of whether a child has symptoms or is known to have malaria. The World Health Organization (WHO) recommends SMC in areas with seasonal malaria transmission where the intervention is epidemiologically appropriate. Monthly administration of sulfadoxine-pyrimethamine plus amodiaquine (SP+AQ) has been widely used in African SMC programmes (World Health Organization [WHO], 2023).Nigeria adopted SMC in 2014, and implementation subsequently expanded considerably. By 2021, SMC was being implemented in 18 Nigerian states and was delivered through large numbers of community drug distributors (CDDs) to millions of children (Ogbulafor et al., 2023). Kano State is particularly important in this context because malaria remains a major public-health problem and SMC campaigns have been implemented in the state since 2016 (Okereke et al., 2023).

The success of SMC, however, cannot be determined solely by medicine efficacy. Community acceptance is a critical component of programme effectiveness. Even when an intervention is clinically effective, caregivers may refuse medicines, fail to administer subsequent doses, discontinue treatment following perceived adverse effects, or misunderstand the preventive purpose of the intervention. Conversely, positive experiences, trusted health workers, community endorsement, and effective communication can promote acceptance.Recent empirical research conducted in Nigeria found that SMC was widely accepted by communities, while also identifying barriers including concerns about side effects, inadequate understanding of SMC, mistrust of free medicines, medicine shortages, and dissatisfaction with some community drug distributors (Ogbulafor et al., 2023). Importantly, Kano was one of the states included in this research, making the evidence directly relevant to the present topic.

### 1.1 Problem statement

Despite substantial investment in malaria prevention, malaria continues to impose a significant burden on Nigerian households and health systems. SMC provides an opportunity to reduce malaria illness among young children during periods of high transmission, but its effectiveness at population level depends on high coverage and correct administration.

In Kano State, SMC has been implemented through community-based delivery systems. However, acceptance can vary according to caregivers' knowledge, previous experiences with SMC, perceptions of medicine safety and effectiveness, social norms, trust in health workers, and the involvement of community leaders. Published qualitative evidence from Kano demonstrates that many caregivers appreciate SMC and associate it with reductions in malaria illness and household expenditure, but concerns remain about adverse effects and lack of understanding of the intervention (Ogbulafor et al., 2023).

There is therefore a need to examine community acceptance systematically and identify factors that facilitate or hinder acceptance. Understanding these factors can assist programme managers and policymakers in strengthening SMC implementation in Kano State.

### 1.2 Purpose of the study

The purpose of this paper is to examine community acceptance of seasonal malaria chemoprevention as a strategy for preventing malaria among children in Kano State, Nigeria.

### 1.3 Objectives

The specific objectives are to:

1. examine caregivers' knowledge and perceptions of SMC in Kano State;
2. assess the perceived effectiveness of SMC in preventing childhood malaria;
3. identify factors influencing community acceptance of SMC;
4. examine concerns associated with SMC medicines and their administration;
5. assess the role of community drug distributors and other community-based actors in promoting SMC acceptance; and
6. identify strategies for improving community acceptance and uptake of SMC in Kano State.

### 1.4 Research questions

1. What is the level of community acceptance of SMC in Kano State?
2. What factors influence caregivers' acceptance of SMC?
3. How do caregivers perceive the effectiveness and safety of SMC medicines?
4. What factors discourage caregivers from accepting or completing SMC?
5. How do community drug distributors and community-based actors influence SMC acceptance?
6. What strategies could improve acceptance and uptake of SMC in Kano State?

## 2. Literature Review

### 2.1 Concept of seasonal malaria chemoprevention

SMC is a preventive malaria intervention involving the administration of antimalarial medicines during the period of peak malaria transmission. Its primary purpose is to prevent malaria infection and reduce malaria morbidity and severe disease among vulnerable children.

The WHO describes SMC as the intermittent administration of a curative dose of antimalarial medicine to children at high risk of severe malaria who live in areas with seasonal transmission, regardless of whether they are infected at the time of administration (WHO, 2023). The intervention is intended to complement other malaria-control measures, including insecticide-treated nets, effective case management, vector control, and health education.

Evidence summarized in World Health Organization malaria guidance indicates that SMC can substantially reduce malaria episodes in appropriately selected populations and transmission settings (WHO, 2015, 2024). Consequently, SMC has become an important component of malaria-control strategies in several African countries.

### 2.2 SMC implementation in Nigeria

Nigeria began implementing SMC in 2014, and the intervention has expanded progressively. Ogbulafor et al. (2023) reported that by 2021 SMC was being implemented in 18 states, with campaigns conducted over approximately four months between June and October. The scale-up involved approximately 143,000 community drug distributors and targeted approximately 23 million children.

The large scale of the programme makes community acceptance essential. Because medicines are usually delivered through community-based channels, caregivers' perceptions and relationships with distributors can directly influence uptake.

### 2.3 Malaria and SMC in Kano State

Kano State is located in north-western Nigeria and has a large population. The state experiences malaria transmission throughout the year, with marked seasonal peaks during the rainy season. Published research reports that SMC campaigns commenced in Kano in 2016 (Okereke et al., 2023).

Kano is therefore an important setting for examining SMC acceptance because the intervention operates within established community structures and a population with considerable experience of malaria prevention and treatment.

### 2.4 Community acceptance of SMC

Community acceptance refers to the extent to which individuals and communities are willing to receive, support, use, and continue participating in an intervention. In SMC, acceptance may be expressed through caregivers allowing children to receive medicines, administering the medicines as instructed, completing the prescribed course, and participating in subsequent monthly cycles.The empirical evidence from Nigeria suggests that SMC has generally been well accepted. Ogbulafor et al. (2023) found that malaria was widely regarded as a major health concern and that SMC was generally accepted as an important preventive measure. Community drug distributors were also generally trusted.

Kano-specific evidence is particularly encouraging. In the qualitative study conducted by Ogbulafor et al. (2023), caregivers in Kano reported positive experiences with SMC and perceived reductions in malaria among children. Some participants also associated SMC with reductions in household spending on medicines and visits to medicine vendors.However, acceptance should not be interpreted as universal or unconditional. The same study identified several barriers, including perceived side effects, insufficient knowledge about the purpose of SMC, concerns about the quality or effectiveness of free medicines, drug shortages, and concerns about the interpersonal behaviour of some distributors.

### 2.5 Knowledge and awareness

Knowledge is an important determinant of acceptance. Caregivers who understand that SMC is a preventive intervention may be more willing to accept medicines even when their children are not visibly ill.Conversely, caregivers who believe medicines should only be given to sick children may question why apparently healthy children should receive antimalarial drugs. Ogbulafor et al. (2023) found that lack of understanding of the purpose of SMC was one of the barriers to uptake reported by participants.This finding suggests that SMC programmes should emphasize the preventive nature of the intervention and explain why medicines are administered to children who may not currently have malaria symptoms.

### 2.6 Perceived effectiveness

Perceived effectiveness is another important determinant of acceptance. Caregivers are more likely to continue accepting SMC if they observe positive changes in their children's health.Evidence from Kano indicates that some caregivers perceived a reduction in malaria episodes following SMC administration (Ogbulafor et al., 2023). Such positive experiences can create a reinforcing cycle in which successful prevention increases trust, and increased trust encourages continued participation.Nevertheless, perceived effectiveness may also be negatively affected when a child develops malaria after receiving SMC. Caregivers may interpret such an event as evidence that the medicines are ineffective, even though SMC is not intended to provide absolute protection against every malaria infection.

### 2.7 Perceived adverse effects and medicine safety

Concerns about adverse effects represent an important barrier to acceptance. Caregivers may become reluctant to accept subsequent courses if they associate previous doses with vomiting, weakness, fever, or other symptoms. Ogbulafor et al. (2023) reported concerns about side effects across the Nigerian study sites, including Kano. The study also found concerns about the quality and efficacy of medicines.These findings emphasize the importance of pharmacovigilance, clear counselling, and rapid communication about expected adverse reactions. Caregivers need to understand which reactions are mild and temporary and which symptoms require medical attention.

### 2.8 Trust in community drug distributors

Trust is central to community-based health interventions. CDDs are often the primary point of contact between SMC programmes and households. Their behaviour, communication skills, knowledge, and relationship with communities can therefore influence acceptance. Ogbulafor et al. (2023) found that CDDs were generally trusted, while also reporting concerns about the attitudes of some distributors. The researchers recommended recruiting distributors from local communities because local familiarity can strengthen trust.The role of local women is also important. Research specifically examining SMC implementation in Kano found that "lead mothers" could influence caregivers' health behaviours because of their strong community connections and relationships with caregivers (Okereke et al., 2023). This provides evidence that SMC programmes can benefit from trusted community intermediaries beyond conventional medicine distributors.

## 3. Theoretical Framework

This paper is informed by the **Health Belief Model (HBM)** developed by Rosenstock (1974).

The Health Belief Model proposes that health behaviour is influenced by individuals' perceptions of:

- susceptibility to a health problem;
- severity of the health problem;
- benefits of a recommended preventive action;
- barriers to undertaking the action;
- cues that stimulate action; and
- confidence in one's ability to perform the recommended behaviour.

The model is relevant to SMC acceptance in Kano State.First, caregivers who perceive malaria as a serious threat to their children are more likely to accept preventive measures. Second, caregivers who believe SMC effectively reduces malaria are more likely to perceive benefits from accepting the medicines. Third, perceived barriers—including concerns about adverse effects, mistrust, medicine shortages, or inconvenient delivery—may reduce acceptance.Community drug distributors, lead mothers, religious leaders, and other community influencers can provide cues to action. They can also increase confidence by explaining how and why SMC medicines should be administered.Thus, the HBM provides a useful framework for understanding why SMC may be widely accepted while still experiencing pockets of refusal or incomplete adherence.

## 4. Methodology

### 4.1 Research design

The paper adopts a qualitative empirical research design based on documented evidence concerning community attitudes and SMC uptake in Nigeria, with particular attention to findings from Kano State.The principal empirical evidence comes from the multicentre qualitative study by Ogbulafor et al. (2023), which included Kano State, and the Kano-specific formative research by Okereke et al. (2023).

### 4.2 Study area

The study focuses on selected communities in Gaya, Dala and Rano Local Governments of Kano State, north-western Nigeria. Kano is characterized by a predominantly Hausa-speaking population and experiences endemic malaria with seasonal increases during the rainy period.SMC campaigns began in Kano State in 2016. Research has subsequently examined both community acceptance of SMC and the role of community-based actors in improving adherence and uptake (Okereke et al., 2023).

### 4.3 Study population

The relevant population comprises caregivers of eligible children, community drug distributors, community leaders, lead mothers, health workers, and other stakeholders involved in SMC implementation.The most important unit of analysis for community

acceptance is the caregiver because caregivers generally make decisions concerning whether children receive SMC medicines and whether subsequent doses are administered.

## 5. Findings

### 5.1 General acceptance of SMC

The available empirical evidence indicates that SMC enjoys substantial community acceptance in Kano State. Participants generally recognized malaria as a major health problem and viewed SMC as an important strategy for protecting children.The multicentre Nigerian study reported that SMC was widely accepted across the study sites, including Kano (Ogbulafor et al., 2023). Acceptance was associated with caregivers' previous experiences with the intervention and their perception that SMC reduced malaria illness.

### 5.2 Perceived reduction in malaria

A major facilitator of acceptance was the perception that SMC reduced malaria among children. Caregivers who observed improvements in their children's health were more likely to accept subsequent courses.This finding is consistent with the Health Belief Model because perceived benefit is expected to increase the likelihood of preventive behaviour.

### 5.3 Reduction in household expenditure

Some caregivers associated SMC with reduced expenditure on malaria treatment. The perception that children experienced fewer malaria episodes meant that households did not need to purchase medicines or seek treatment as frequently.This finding is important because economic considerations can influence health-seeking behaviour in low-resource communities. A preventive intervention that is perceived to reduce household medical costs may therefore gain stronger community support.

### 5.4 Concerns about side effects

Despite generally positive attitudes, adverse effects represented an important source of concern. Some caregivers associated SMC medicines with weakness or other symptoms.Such experiences can undermine trust if they are not adequately explained by CDDs. The existence of concerns does not necessarily indicate that the intervention is unsafe; rather, it demonstrates the importance of effective counselling and pharmacovigilance.

### 5.5 Lack of understanding of the preventive purpose

Some caregivers were unclear about why children who were apparently healthy needed antimalarial medicines. Lack of understanding of the purpose of SMC was identified as a barrier to uptake in the Nigerian study (Ogbulafor et al., 2023).This finding is especially important because SMC differs from conventional malaria treatment. Treatment is generally sought after symptoms develop, whereas SMC is administered proactively to prevent malaria during a period of high transmission.

### 5.6 Trust and concerns about free medicines

The evidence also indicates that the provision of medicines free of charge can sometimes generate suspicion. Some caregivers questioned whether medicines provided at no cost could be safe or effective.This illustrates the importance of transparency and community

engagement. Acceptance is more likely when communities understand who provides the medicines, why the medicines are free, how their safety is monitored, and what benefits they provide.

### 5.7 Preference for door-to-door delivery

Caregivers generally preferred door-to-door SMC delivery to fixed-point approaches. Door-to-door delivery allowed caregivers to remain engaged in household activities while also providing an opportunity for CDDs to explain the medicine, answer questions, and demonstrate administration (Ogbulafor et al., 2023).This finding also supports continued investment in community-based delivery rather than relying exclusively on facility-based distribution.

### 5.8 Role of lead mothers

Evidence from Kano demonstrates that lead mothers can play a useful role in strengthening SMC acceptance. Okereke et al. (2023) found that lead mothers have strong connections with communities and relationships with caregivers, enabling them to influence health behaviours.However, the study also identified weaknesses in recruitment, training, supervision, and sustainability. Improving these areas could increase the contribution of lead mothers to SMC campaigns.

## 6. Discussion and Conclusion

The evidence reviewed in this paper demonstrates that community acceptance is one of the strengths of SMC implementation in Kano State. The generally positive attitudes observed among caregivers suggest that SMC has become recognizable and acceptable as a malaria-prevention intervention.The findings are consistent with WHO's position that SMC can be an effective component of malaria prevention in areas with seasonal transmission (WHO, 2023, 2024). However, programme effectiveness depends on more than the biological efficacy of SP+AQ. If caregivers refuse medicines or do not administer the complete course, the population-level benefits of SMC may be reduced.The findings further indicate that acceptance is strongly related to perceived benefits. Caregivers who believed that SMC reduced malaria were more willing to continue participation. This is consistent with the Health Belief Model, in which perceived benefits encourage preventive behaviour (Rosenstock, 1974).At the same time, perceived barriers remain important. Concerns about side effects, medicine quality, lack of information, and shortages may undermine acceptance. These findings are consistent with Ogbulafor et al. (2023), who identified similar barriers across Nigerian SMC implementation areas.Trust also emerged as an important issue. CDDs are not merely medicine distributors; they are communicators and representatives of the health programme. Their behaviour can either strengthen or weaken confidence in SMC. Recruiting CDDs from the communities they serve may therefore improve acceptance.

The role of lead mothers is especially relevant to Kano. Okereke et al. (2023) demonstrated that lead mothers' close relationships with caregivers can enable them to influence health behaviours. This suggests that SMC programmes should not depend solely on conventional health workers but should deliberately use trusted community structures.The preference for door-to-door distribution has important operational implications. Door-to-door delivery provides an opportunity for individualized communication and may be particularly suitable in communities where caregivers have household responsibilities or where access to fixed

health facilities is difficult. It also provides a direct opportunity to reinforce information about dosage, administration, side effects, and subsequent monthly cycles.Community acceptance of seasonal malaria chemoprevention in Kano State is generally favourable. Available empirical evidence indicates that caregivers recognize malaria as a major health problem and that many perceive SMC as effective in reducing childhood malaria.However, acceptance is not uniform. Concerns about side effects, limited knowledge of the preventive purpose of SMC, doubts about free medicines, medicine shortages, and unsatisfactory interactions with some distributors may reduce uptake.The evidence therefore suggests that the central challenge is not simply introducing SMC but sustaining informed and confident participation throughout successive campaign cycles.

## 8. Recommendations

1. **Strengthen community health education.** SMC communication should clearly explain that the medicines are preventive and are administered to children even when they are not currently ill.
2. **Use culturally appropriate communication.** Messages should be delivered in Hausa and other locally appropriate formats and should take account of local beliefs and community structures.
3. **Maintain door-to-door delivery.** Because caregivers generally prefer household delivery, the approach should remain an important component of SMC implementation.
4. **Strengthen CDD training.** Community drug distributors should receive adequate training in medicine administration, communication, counselling, adverse-event recognition, and respectful interaction with caregivers.
5. **Recruit locally trusted distributors.** Local recruitment can strengthen trust and reduce suspicion concerning externally provided medicines.
6. **Improve pharmacovigilance.** Caregivers should receive clear information about possible adverse effects and where to seek assistance when serious reactions occur.
7. **Strengthen the role of lead mothers.** Lead mothers should receive standardized training, supervision, job aids, and clear responsibilities.
8. **Engage traditional and religious leaders.** Trusted community leaders should be involved in advocacy and sensitization before and during SMC campaigns.
9. **Prevent medicine shortages.** Adequate forecasting, procurement, storage, and distribution are essential because shortages can undermine community confidence.
10. **Monitor community acceptance continuously.** Programme monitoring should include measures of refusal, incomplete administration, caregiver concerns, perceived adverse effects, and reasons for non-acceptance.

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