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# Negotiating trust and risk: a conceptual model of caregiver decision-making for seasonal malaria chemoprevention in Abuja, Nigeria

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## Abstract

# Background

Seasonal malaria chemoprevention (SMC) is an effective strategy for preventing malaria in children under five. However, uptake depends on caregiver decisions, which are shaped by trust in the medication, perceived risks, social dynamics, and health system factors. Understanding these decision-making processes is critical to improving program coverage.

# Methods

We conducted a qualitative study among caregivers of children aged 3–59 months in the Federal Capital Territory, Abuja, Nigeria. Data was collected through six focus group discussions (FGDs) with purposively selected participants from Abaji (n = 5), Abuja Municipal Area Council (AMAC, n = 5), Bwari (n = 4), Gwagwalada (n = 3), Kuje (n = 5), and Kwali (n = 5). FGDs were audio-recorded, transcribed verbatim, and analyzed thematically.

# Results

We propose the trust–risk negotiation model to explain how caregivers negotiate trust and risk when deciding to use SMC. The model identifies four interacting factors: trust formation through personal experience, risk perception shaped by side effects, social context including family and community influences, and health system factors such as access to drug and credible delivery. We found that these factors influence caregiver decisions, leading to four possible outcomes: accept, continue, discontinue, or reject SMC. Our model shows that uptake of SMC is a negotiated process influenced by experience, social support, and system-level factors.

# Conclusion

Effective SMC implementation requires strategies that strengthen caregiver trust, minimize perceived risks, leverage positive social influence, and ensure reliable health system support. Our model provides a framework for designing interventions to improve uptake and sustain malaria prevention among children under five.

# Clinical trial number:

Not applicable

## 1. Background

Malaria remains a major public health challenge in tropical and subtropical regions. Malaria causes significant morbidity and mortality, especially among children under five and pregnant women. According to the World Malaria Report [1], the World Health Organization (WHO) African Region accounted for 94% of malaria cases and 95% of deaths in 2024, with approximately 75–76% of these fatalities occurring in children under five. Nigeria remains the highest burden country, contributing 30.3% of global malaria deaths and 38.6% of global under-five deaths [1]. Malaria remains highly prevalent in the Federal Capital Territory (FCT), Abuja, with facility-based studies reporting infection rates of up to 32% among febrile patients [2].

Seasonal malaria chemoprevention (SMC) is a proven intervention recommended by the WHO to prevent malaria in children aged 3–59 months during peak transmission seasons. SMC involves monthly administration of sulfadoxine-pyrimethamine and amodiaquine for three days. The first dose is given by a health worker while caregivers are responsible for administering doses on Days 2 and 3 [3–6]. Despite its documented effectiveness in reducing malaria-related morbidity and mortality, SMC uptake is influenced by multiple factors, including caregiver perceptions, household dynamics, and health system delivery [3, 5–8].

Existing evidence on SMC uptake often emphasizes knowledge, attitudes, and practices [8], but neglects the complex decision-making processes that caregivers navigate under uncertainty. Caregiver decisions are shaped not only by awareness of an intervention but also by experiential trust, interpretation of side effects, social negotiation, and interactions with the health system [9–11]. Understanding these dynamics is critical to sustaining high SMC coverage and ensuring its long-term impact.

This study addresses this gap by examining how caregivers negotiate trust and perceived risk in deciding whether to accept, continue, or discontinue SMC for their children. Using qualitative insights, we propose a trust–risk negotiation model to conceptualize the social, experiential, and system-level factors that influence caregiver decision-making in SMC programs.

## 2. Methods

## 2.1 Study setting

The study was conducted in the FCT, Abuja, Nigeria. Abuja is located in the North-Central geopolitical zone of Nigeria and has a population of over 4 million. The city lies between latitudes 8°25'N and 9°20'N, and longitudes 6°45'Eand7°39'E, covering an area of approximately 8,000 $km^2$ [12, 13]. It borders Niger, Kaduna, Nasarawa, and Kogi States and is divided into six area councils: Abuja Municipal Area Council (AMAC), Bwari, Gwagwalada, Kuje, Kwali, and Abaji. The territory experiences a tropical climate, with a rainy season from April to September and a dry season from October to March. Annual rainfall ranges from 1,100 mm to 1,600 mm, and temperatures fluctuate between 22°C and 30°C. These conditions facilitate the breeding of mosquitoes, sustaining malaria transmission year-round.

## 2.2 Study population

The study population comprised caregivers of children aged 3–59 months residing in selected communities across the FCT. Caregivers were eligible for the study if they had children within the age range, reside in the FCT, and provided informed consent to participate in the study.

## 2.3 Study design, sample size and data collection

The study employed a descriptive cross-sectional design using a qualitative approach. Data was collected through focus group discussions (FGDs) conducted with 3–5 caregivers per group across the six area councils of Abuja. Participants were purposively selected from households in the six FCT area councils—Abuja Municipal Area Council (AMAC), Bwari, Gwagwalada, Kuje, Kwali, and Abaji—to ensure variation in occupation, educational background, age, and prior SMC exposure.

Focus group discussions (FGDs) were guided by a semi-structured discussion guide. The guide covered four main areas: participants' knowledge and awareness of SMC, perceptions and attitudes toward the program, factors influencing uptake, and recommendations for improving program implementation. Sessions were audio-recorded with participants' consent, transcribed verbatim, and anonymized to maintain confidentiality.

## 2.4 Data analysis

Thematic analysis was used to identify patterns related to trust formation, risk perception, social negotiation, and health system interactions, which served as the foundation for the trust–risk negotiation model. Themes were iteratively refined to reflect caregivers' decision-making processes under uncertainty, highlighting both individual and contextual factors.

# 3. Results

## 3.1 Participant characteristics

A total of six focus group discussions (FGDs) were conducted involving 27 caregivers of children aged 3–59 months across selected communities in the Federal Capital Territory, Abuja. Participants were drawn from the six area councils: Abaji (n = 5), Abuja Municipal Area Council (AMAC, n = 5), Bwari (n = 4), Gwagwalada (n = 3), Kuje (n = 5), and Kwali (n = 5). Participants were predominantly mothers and primary caregivers, with varied socio-economic backgrounds, including civil servants, traders, and homemakers, and differing family sizes. The sample included caregivers with diverse experiences of SMC, including consistent users, those who discontinued due to concerns such as side effects, and those with limited or no prior awareness of the program.

## 3.2 Experiential pathways to trust formation

Caregivers' narratives revealed that trust in Seasonal Malaria Chemoprevention (SMC) was not immediate but developed progressively through lived experience. Initial skepticism was common, particularly at first contact with the intervention, often due to uncertainty about effectiveness or

concerns about adverse reactions. One participant noted, *"Initially I was doubting it but when I administered it to my children I now discovered that it's a good drug"* (BWR 2, 2025).

Trust was subsequently built through observed effectiveness in children, particularly the absence or reduction of malaria episodes following use. Caregivers frequently linked continued participation to tangible health outcomes: *"When I gave it to my child… there was no symptom of malaria"* (GGW 2, 2025), and *"My visits to the hospital due to malaria have reduced"* (AMAC 2, 2025). For many, these direct observations served as the primary validation of the intervention, outweighing prior doubts or limited prior knowledge.

Over time, repeated positive experiences reinforced confidence and normalized use. Some caregivers described a transition from cautious trial to routine adoption: *"I've been giving it to my children since it started over two years now"* (AMAC 2, 2025), while others emphasized sustained effectiveness despite minor side effects: *"My child has not had malaria… but even with those [side effects]… I continued the medication"* (AMAC 3, 2025). Even among those who experienced initial uncertainty, observed benefits often led to reconsideration and willingness to re-engage with the program: *"I thought it wouldn't work before… so I was surprised. It worked"* (BWR 4, 2025).

These findings indicate that trust in SMC is experiential and iterative. Trust in SMC emerges from direct observation of benefits and reinforced through repeated use rather than being solely driven by prior knowledge or health messaging.

## 3.3 Side effects as a central driver of risk perception

Across discussions, caregivers consistently identified side effects, particularly fever, rashes, weakness, and general discomfort, as a central feature shaping perceptions of SMC. These experiences were common and widely recognized, but their interpretation varied substantially, producing divergent behavioral outcomes.

Some caregivers described intense reactions that triggered fear and led to discontinuation. For example, one participant reported: *"My child took it, but one of them had a terrible reaction. She had a fever for two days… [her father] warned me not to give her the medication again"* (AMAC 1, 2025). Similarly, another caregiver stated: *"I am aware of the program, but I also stopped because of the side effects"* (AMAC 4, 2025). In these cases, side effects were interpreted as harmful or dangerous, often reinforced by household dynamics, resulting in withdrawal from the program.

However, other caregivers normalized similar symptoms, framing them as expected and manageable. One participant explained: *"My child has not had malaria apart from minor side effects like mild fever and skin rashes… they faded after a day, so I continued the medication"* (AMAC 3, 2025). Another noted: *"My son had a serious fever the first time… but subsequently his body got used to it"* (KWL 1, 2025). In such instances, prior information or reassurance, often from health workers, enabled caregivers to reinterpret side effects as transient, supporting continued use.

This divergence is further illustrated in how caregivers responded to guidance. A participant recounted: *"I was told there will be side effects and I should not panic… I went to the primary healthcare center… and since then my child has been well"* (KWL 4, 2025). Similarly, another caregiver managed symptoms with advice: *"His body became hot and weak but I was advised… and he was well"* (KUJ 5, 2025). These accounts highlight the mediating role of information and support in shaping risk interpretation.

Even among caregivers who trusted the intervention, side effects remained a source of concern. As one participant noted: "*I trust it… but sometimes… the side effects can really discourage someone"* (KWL 5, 2025), while another added: *"It is very effective but sometimes it affects the children through rashes… red eyes… body will look somehow"* (ABJ 2, 2025).

These findings reveal a critical duality: the same physiological experience (e.g., fever or rash) is interpreted either as a normal, tolerable response or as a sign of harm. This interpretive divergence fundamentally shapes caregiver decisions as to whether to continue or discontinue use. This positions side effects as an important mechanism through which risk is constructed and negotiated.

# 3.4 Social negotiation of caregiver decisions

Caregivers' decisions to enroll their children in the SMC program were rarely made in isolation. Rather than being individual choices, these decisions were socially negotiated, influenced by household dynamics, community interactions, and broader social norms.

Husbands played an important role in shaping caregivers' decisions. For instance, one caregiver recounted how her child experienced a fever after taking the medication, and her husband's reaction led her to stop administering it: *"She had a fever for two days, and when her father saw it, he warned me not to give her the medication again. He was very upset"* (AMAC 1, 2025). This illustrates how household authority can significantly affect the uptake of health interventions, even when caregivers recognize their potential benefits.

Neighbours also served as informal validators of the program. Caregivers frequently relied on the experiences of those around them to guide their decisions. One participant noted, *"Because my neighbour gave her child, and she said it has been effective"* (KWL 1, 2025), while another mentioned learning about the program from both a neighbour and health workers: *"From one of my neighbours in my community and the health workers…"* (BWR 4, 2025). Such social proof helped reduce uncertainty and encouraged participation.

Rumors and misinformation occasionally acted as barriers, influencing caregivers' perceptions of the program. Concerns about fertility or distrust of government interventions caused hesitation among some participants. One caregiver stated, *"Some might say don't take it. Some will question whether it is working. Some may say don't give your girl child, they're trying to reduce the fertility of the girl child, but for me I don't believe those superstitions"* (BWR 2, 2025). Similarly, another shared, *"He thought the drug was a scam. But now I know it was just a side effect…"* (AMAC 1, 2025).

Religious beliefs, by contrast, were generally supportive or neutral, rather than restrictive. Caregivers explained that their faith did not discourage participation, and in some cases, religious institutions facilitated program awareness. One participant noted, *"My religion is not against it. My religion wants health and the wellbeing of my children"* (BWR 4, 2025), while another added, *"Most times they announce it in church"* (ABJ 6, 2025).

These findings indicate that caregivers' decisions about the SMC program are socially negotiated, rather than purely individual. Household authority, peer influence, rumors, and religious context all intersect to shape participation.

## 3.5 Health system factors shaping trust and uptake

Health system factors played a central role in shaping caregivers' trust in and uptake of the SMC program. Several participants highlighted challenges related to access and communication. Some caregivers reported difficulty when they were absent during home visits or when drug distributors missed certain households, requiring them to travel to primary health centers to obtain the medication. As one caregiver noted, *"Whenever I am not home, and the people distributing the drugs come to my compound, they would skip my house for that month, I would have to go to the PHC to collect it, which is a bit difficult for me as my house is a bit far from the PHC"* (KWL 1, 2025). Limited drug availability and irregular distribution also created obstacles, with some caregivers unsure where or when to obtain the drugs if distributors did not visit their areas.

Despite these challenges, home delivery of the medications was widely appreciated for its convenience. Caregivers consistently expressed that receiving SMC drugs at home reduced transportation costs, minimized stress, and made administration easier, particularly for young children. For instance, one participant remarked, *"I actually don't have a problem with giving the medication at home. For me, I even like it because going to the healthcare center sometimes, you know, there will be a line… so it is better they come to our house"* (KWL 3, 2025). Another participant emphasized that home visits simplified care, noting, *"It makes the work easy for mother because the health workers follow you to your house, you will not stress yourself to the facility"* (ABJ 2, 2025).

However, this convenience was accompanied by a paradoxical element of suspicion. While caregivers valued home delivery, some expressed concern about whether distributors were genuine health workers, potentially undermining trust. A respondent commented, *"To me it's okay but if I will go by advising them, it's better to do it in the health centers because coming home will make other people think otherwise … and that will discourage some of our people"* (GGW 3, 2025).

Communication gaps emerged as another critical factor affecting trust and uptake. Several participants suggested that the SMC program should improve scheduling and awareness. Missed visits or lack of prior notice created anxiety and sometimes led caregivers to skip doses or seek the drugs from health facilities instead. As a participant explained, *"Not really, but they should communicate their schedule. Sometimes you miss them, and then you have to go to the health facility, which can be stressful for some*

*people"* (AMAC 2, 2025). Timely information and predictable schedules were seen as essential to encourage participation and maintain confidence in the program.

## 3.6 The trust–risk negotiation model of SMC uptake

Findings from this study suggest that caregivers' decisions about whether to accept, continue, or stop giving SMC are best understood as a process of negotiating trust and perceived risk, influenced by their own experiences, social environment, and the health system.

The model in Fig. 1 highlights four main factors that shape caregivers' decisions:

### 3.6.1 Trust formation

Caregivers build trust in the medication and the program through personal experience. When children do not get malaria after taking the drugs, or when side effects are manageable, trust strengthens.

### 3.6.2 Risk perception

Perceived risk, mainly from side effects such as fever, rashes, or general discomfort, can make caregivers hesitant. Some caregivers initially doubted the program because of these reactions, but proper guidance and information helped them continue.

### 3.6.3 Social context

Family, neighbors, and community attitudes influence both trust and risk perception. Positive word-of-mouth and support from peers encourage participation, while rumors or cultural misconceptions can increase fear and hesitancy.

### 3.6.4 Health system factors

Access to the medication, home delivery, clear communication, and credible health workers either enable or disrupt caregivers' trust and willingness to participate. Missed visits, unclear schedules, or uncertainty about distributor identity can reduce uptake, even when caregivers generally trust the medication.

These factors interact to shape the decision outcome for each caregiver. Based on their negotiation of trust and risk, caregivers may accept the program and give the medication to their children, continue giving it over multiple cycles, discontinue temporarily due to side effects or missed visits, or reject the program completely if trust is low or perceived risk is high. This model illustrates that SMC uptake is not a one-time decision but a dynamic negotiation, where experience, social influences, and system-level support constantly interact to shape caregiver behavior.

## 4. Discussion

This study advances current understanding by proposing a conceptual model that explains SMC uptake as a dynamic process of negotiating trust and perceived risk. The trust–risk negotiation model

demonstrates how experiential, social, and health system factors interact to shape caregiver decision-making over time.

Trust in SMC was primarily built through caregivers' lived experiences, particularly when they observed that their children remained free from malaria after receiving the medication. Positive outcomes reinforced confidence in both the drugs and the program, while manageable side effects were often reinterpreted over time as normal and acceptable. This finding highlights the central role of experiential learning in shaping health behavior, especially in low-resource settings where firsthand outcomes often carry more weight than formal health information. Similar patterns have been reported in previous studies, where trust in SMC was strengthened through repeated exposure and positive experiences with the intervention, as well as through confidence in community-based distributors and health workers [14, 15]. In addition, supportive family and community networks have been shown to reinforce trust and encourage continued participation. However, earlier research also suggests that limited prior experience with SMC can reduce demand and hinder uptake, particularly where caregivers are more accustomed to treatment-focused approaches rather than preventive interventions [14]. This aligns with our findings, where initial uncertainty was gradually replaced by trust as caregivers gained experience with the program. These findings suggest that trust is not static but develops over time through interaction with the intervention and its outcomes, highlighting the importance of sustained engagement and consistent program delivery.

Perceived risk, largely driven by side effects such as fever, rashes, and general discomfort, emerged as a critical counterforce to trust in SMC. While many caregivers acknowledged the preventive benefits of the medication, these adverse reactions often generated fear, hesitation, and in some cases discontinuation of use. This creates a clear tension in decision-making, where caregivers must weigh observable benefits against immediate negative experiences. Similar concerns have been documented in previous SMC studies, where fears of adverse drug reactions and rumours about safety were identified as key barriers to uptake [15, 16]. Beyond SMC, this pattern reflects broader evidence from vaccine and preventive health research, where perceived side effects significantly influence acceptance, especially when interventions are given to otherwise healthy individuals [17]. In such contexts, even mild or expected reactions may be interpreted as signs of harm rather than indicators of drug activity. Our findings show that risk perception is not fixed; with appropriate guidance and reassurance from health workers, some caregivers were able to reinterpret these side effects and continue with the program. This highlights the need for proactive communication strategies that normalize expected reactions and support caregivers in making informed decisions.

The findings reveal that caregiver decision-making was not purely individual but socially negotiated within a network of family and community influences. Husbands played influential role in shaping decisions, often acting as key gatekeepers. Neighbours and peers also served as important sources of validation or reassurance. At the same time, rumors around issues such as fertility and drug safety contributed to fear and hesitation among some caregivers. These findings align with the Social Ecological Model, which emphasizes that health behaviors are shaped not only by individual factors but

also by interpersonal and community-level influences [18]. They also reflect the concept of subjective norms from the Theory of Planned Behavior, where individuals' decisions are influenced by the expectations and opinions of significant others [19]. Similar patterns have been observed in SMC and other public health interventions, where peer influence and community narratives play a critical role in shaping acceptance or resistance [14, 16]. These findings highlight that trust and risk are socially constructed and negotiated, reinforcing the need for strategies that address not only individual knowledge but also shared beliefs and social dynamics.

Health system factors played a dual role in shaping SMC uptake, both enabling and undermining caregiver participation. On one hand, the door-to-door delivery strategy improved access, reduced transportation barriers, and allowed caregivers to receive medications within their homes, thereby enhancing convenience and encouraging uptake. This aligns with previous findings that home-based delivery of SMC is generally preferred and facilitates participation by fitting into caregivers' daily routines [14, 15]. However, our findings also reveal an important tension: the same delivery approach introduced uncertainty about the identity and credibility of those distributing the medications. Some caregivers questioned whether distributors were genuine health workers, which in turn generated suspicion and hesitation. This creates a paradox where a strategy designed to improve access and convenience may simultaneously generate distrust and reduce confidence in the program. In addition, gaps in communication such as unclear schedules and missed household visits, as well as inconsistent drug availability further disrupted participation. These findings highlight that effective SMC delivery requires not only physical access but also visible credibility, consistent communication, and system reliability to sustain caregiver trust and uptake.

These findings suggest that SMC uptake is not a one-time decision but a continuous process of negotiation. Caregivers constantly reassess their level of trust and perceived risk based on new experiences with the medication, feedback from family and community members, and interactions with the health system. Positive treatment outcomes strengthen trust, while side effects introduce uncertainty and caution. At the same time, social influences can either reinforce confidence or amplify fear, and health system factors can both enable access and generate suspicion. These interacting forces shape caregiver decisions over time, leading to varying outcomes including acceptance, continued use, temporary discontinuation, or complete rejection of the program. This integrated perspective highlights that SMC uptake is not solely determined by knowledge or access, but by an ongoing process in which multiple factors intersect to influence behavior in real-world settings.

These findings have important implications for both program design and policy. The findings suggests that interventions should move beyond simply delivering SMC drugs to actively managing trust throughout the implementation process. This includes providing clear and consistent communication about expected side effects, their duration, and appropriate responses, so that caregivers are not left to interpret these experiences as signs of harm. In addition, establishing predictable and well-communicated distribution schedules can reduce missed opportunities and improve caregiver preparedness. The visibility and credibility of community distributors should also be strengthened

through clear identification, community introduction, and alignment with trusted health structures, in order to reduce suspicion associated with door-to-door delivery.

At the policy level, the findings suggest that strengthening community-level trust mechanisms may be as critical as improving drug availability. Programs that leverage existing social networks, such as community leaders, peer caregivers, and local health workers, may enhance acceptance by reinforcing positive norms and addressing misinformation. Optimizing SMC uptake requires a dual focus on both service delivery and trust-building, recognizing that caregiver decisions are shaped not only by access to medication but also by how risks and benefits are understood within their social and health system context.

However, the study has some limitations which should be considered when interpreting the findings. The study was conducted in selected communities within the FCT, Abuja, which may limit the generalizability of the trust–risk negotiation model to other regions of Nigeria or countries with different malaria epidemiology, health system structures, or sociocultural contexts. While our purposive sampling aimed to capture diverse caregiver experiences, the relatively small sample size (27 participants) may not reflect the full range of perspectives within the broader population. The study also focused primarily on caregivers' perspectives and did not include direct observation of SMC administration or perspectives from health workers, which could provide complementary insights into programmatic challenges. Despite these limitations, the study provides a robust conceptual framework that integrates experiential, social, and health system factors influencing SMC uptake. This offers valuable information for future implementation strategies and research.

# 5. Conclusions

This study advances understanding of seasonal malaria chemoprevention (SMC) uptake by proposing the trust–risk negotiation model, which conceptualizes caregiver decision-making as a dynamic negotiation between trust and perceived risk. Caregivers' choices are shaped not only by personal experience with the medication but also by social influences from family, neighbors, and community networks, as well as health system factors such as access, delivery strategies, and credibility of distributors.

Our findings highlight that SMC uptake is not a one-time event but a continuous process where experiences, social feedback, and health system factors constantly interact to influence decisions to accept, continue, temporarily discontinue, or reject SMC. This conceptual framework highlights the importance of managing trust and perceived risk alongside drug delivery. It emphasizes that programmatic success requires predictable schedules, clear communication about side effects, visible identification of health workers, and active engagement with community norms. By integrating experiential, social, and systemic dimensions, the model provides actionable insights for policymakers, program designers, and public health practitioners seeking to improve SMC coverage and effectiveness.

Future research should test and refine this model in diverse settings to strengthen its applicability and support evidence-based strategies for malaria prevention among children in endemic regions.

# Abbreviations

SMC – Seasonal Malaria Chemoprevention

FCT – Federal Capital Territory

FGDs – Focus Group Discussions

AMAC – Abuja Municipal Area Council

WHO – World Health Organization

KWL – Kwali

GGW – Gwagwalada

KUJ – Kuje

ABJ – Abaji

BWR – Bwari

PHC – Primary Health Care

# Declarations

### Ethical consideration

The study adhered strictly to international ethical guidelines as enshrined in the Declaration of Helsinki. Ethical approval was obtained from the Federal Capital Territory (FCT) Health Research Ethics Committee (FHREC/2025/01/62/10-03-25) and the Nile University Ethics and Research Committee (0020/25). Informed consent was obtained from all participants prior to engagement. Participants either signed or provided a thumbprint on consent forms after being fully informed about the study objectives, procedures, and intended use of findings. Confidentiality was strictly maintained, with no personally identifiable information disclosed. Participants were informed of their right to withdraw at any time without repercussions and to decline answering questions they found uncomfortable.

### Consent for publication

Not applicable

### Availability of data and materials

The datasets supporting the conclusions of this article are included within the article (and its additional files).

**Competing interests**

The authors declare that they have no competing interests.

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**Authors' contribution**

Nana Aisha El-Yakub and Saddiq Abdurrahman conceptualized the study, designed the methodology, supervised data collection, and contributed to the first draft of the manuscript. Nana Aisha El-Yakub additionally secured study resources and obtained ethical approval. Saddiq Abdurrahman provided validation and a supervisory role throughout the study. Nnaemeka Emmanuel Akubue revised the first draft of the manuscript and offered critical feedback. Luke Oche Peter contributed to research design, data analysis and interpretation, prepared the final manuscript, revised it, and designed the Trust–Risk Negotiation Model. All authors have read and approved the final version of the manuscript.

# References

1. World Health Organization. World malaria report 2025. Geneva: World Health Organization. 2025. Available from: https://www.who.int/teams/global-malaria-programme/reports/world-malaria-report-2025
2. Ihekuna C, Omeiza GO, Melang K, Mirabeau T, Badung ES, Egesimba MC. Analytical overview of the prevalence of malaria in the Federal Capital Territory Abuja, Nigeria. Saudi J Biomed Res. 2024;9(9):197–204.
3. Bakai TA, Thomas A, Iwaz J, Atcha-Oubou T, Tchadjobo T, Khanafer N, Rabilloud M, Voirin N. Effectiveness of seasonal malaria chemoprevention in three regions of Togo: a population-based longitudinal study from 2013 to 2020. Malar J. 2022;21(1):400.
4. World Health Organization. Seasonal malaria chemoprevention with sulfadoxine–pyrimethamine plus amodiaquine in children: a field guide. 2nd ed. Geneva: WHO; 2023.
5. Thwing J, Williamson J, Cavros I, Gutman JR. Systematic review and meta-analysis of seasonal malaria chemoprevention. Am J Trop Med Hyg. 2023;110(1):20.
6. Nikiema S, Soulama I, Sombié S, Tchouatieu AM, Sermé SS, Henry NB, et al. Seasonal malaria chemoprevention implementation: effect on malaria incidence and immunity in a context of expansion of *Plasmodium falciparum* resistant genotypes with potential reduction of the effectiveness in Sub-Saharan Africa. Infect Drug Resist. 2022;15:4517–27.

7. Adjei MR, Kubio C, Buamah M, Sarfo A, Suuri T, Ibrahim S, et al. Effectiveness of seasonal malaria chemoprevention in reducing under-five malaria morbidity and mortality in the Savannah Region, Ghana. Ghana Med J. 2022;56(2):64.
8. Koko DC, Maazou A, Jackou H, Eddis C. Analysis of attitudes and practices influencing adherence to seasonal malaria chemoprevention in children under 5 years of age in the Dosso Region of Niger. Malar J. 2022;21(1):375.
9. Deml MJ, Buhl A, Huber BM, Burton-Jeangros C, Tarr PE. Trust, affect, and choice in parents' vaccination decision-making and health-care provider selection in Switzerland. Sociol Health Illn. 2022;44(1):41–58.
10. Zegwaard MI, Aartsen MJ, Grypdonck MH, Cuijpers P. Trust: an essential condition in the application of a caregiver support intervention in nursing practice. BMC Psychiatry. 2017;17(1):47.
11. Svege S, Kaunda B, Robberstad B, Nkosi-Gondwe T, Phiri KS, Lange S. Post-discharge malaria chemoprevention (PMC) in Malawi: caregivers' acceptance and preferences with regard to delivery methods. BMC Health Serv Res. 2018;18(1):544.
12. Nwokoro UU, Dahiru T, Olorukooba A, Daam CK, Waziri HS, Adebowale A, et al. Determinants of perinatal mortality in public secondary health facilities, Abuja municipal area council, Federal Capital Territory, Abuja, Nigeria. Pan Afr Med J. 2020;37:114.
13. FCT Education Management Information System. Geography of Federal Capital Territory Abuja. 5371_Geography of Federal Capital Territory Abuja.pdf. Available from: https://fctemis.org/notes/5371_Geography%20of%20Federal%20Capital%20Territory%20Abuja.pdf
14. Antwi GD, Bates LA, King R, Mahama PR, Tagbor H, Cairns M, et al. Facilitators and barriers to uptake of an extended seasonal malaria chemoprevention programme in Ghana: a qualitative study of caregivers and community health workers. PLoS ONE. 2016;11(11):e0166951. https://doi.org/10.1371/journal.pone.0166951.
15. Ogbulafor N, Uhomoibhi P, Shekarau E, Nikau J, Okoronkwo C, Fanou NM, et al. Facilitators and barriers to seasonal malaria chemoprevention (SMC) uptake in Nigeria: a qualitative approach. Malar J. 2023;22(1):120.
16. Lasmi K, Elimian K, Donovan L, et al. Barriers to the quality delivery of seasonal malaria chemoprevention in Chad and Burkina Faso: a qualitative exploration of caregivers and community distributors' perspectives. Malar J. 2024;23:216. https://doi.org/10.1186/s12936-024-05034-6.
17. Bam V, Mohammed A, Kusi-Amponsah A, Armah J, Lomotey AY, Budu HI, et al. Caregivers' perception and acceptance of malaria vaccine for children. PLoS ONE. 2023;18(7):e0288686.
18. Olaniyan A, Isiguzo C, Hawk M. The socioecological model as a framework for exploring factors influencing childhood immunization uptake in Lagos state, Nigeria. BMC Public Health. 2021;21:867.
19. Shmueli L. Predicting intention to receive COVID-19 vaccine among the general population using the health belief model and the theory of planned behavior model. BMC Public Health. 2021;21:804.

# Figures

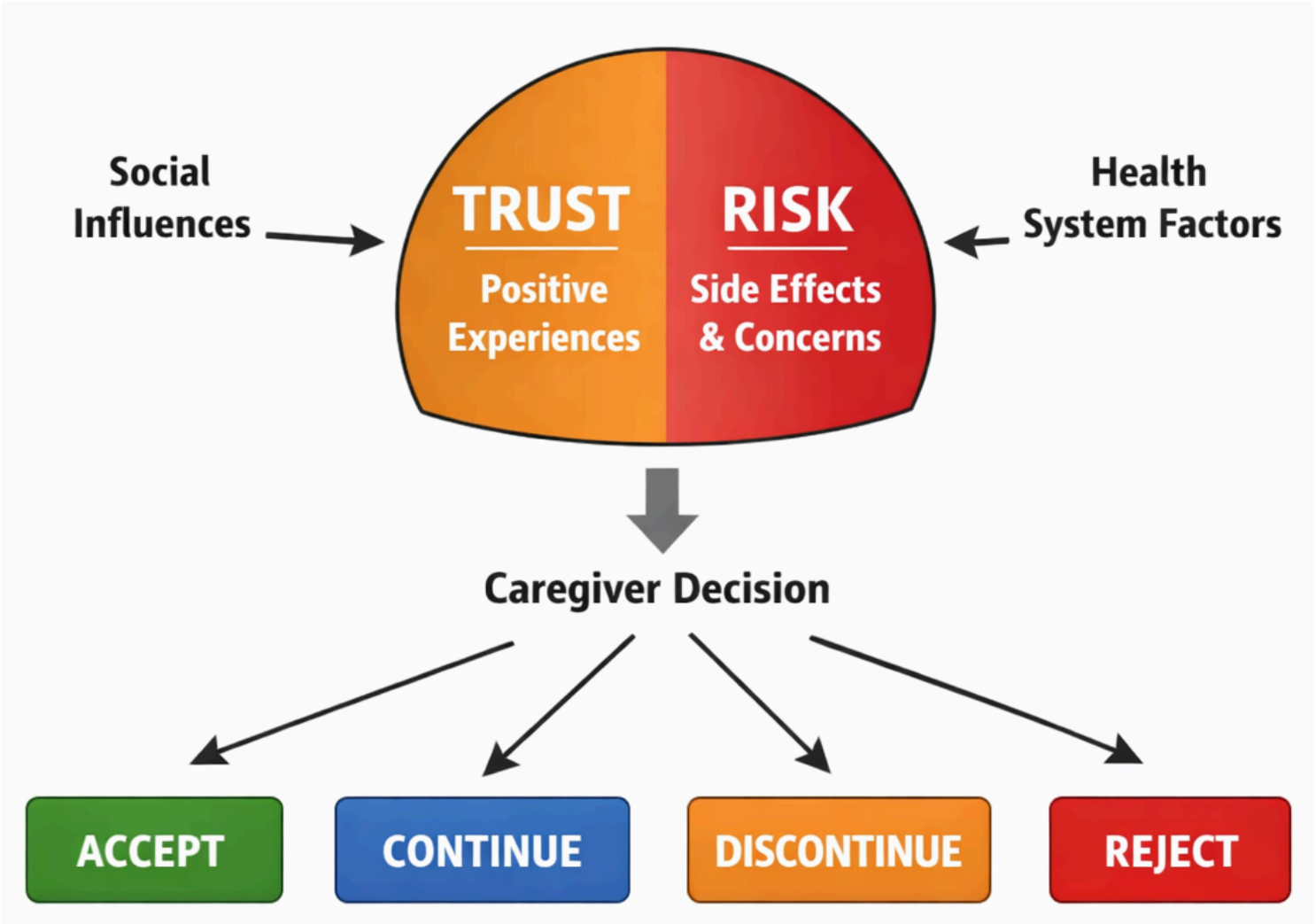



**Figure 1**

The trust-risk negotiation model of SMC uptake

## Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- SMCFGDtranscript.docx