

Malaria Chemoprevention in Pregnant Women in Africa

Godfrey Martin Mubyazi¹

Abstract

Malaria keeps claiming the lives of millions of pregnant women and children in the world, especially in developing countries. Pregnant women and children under the age of five years are the most vulnerable groups mainly because of their lower immunity statuses, compared to the general population. Efforts towards elimination of malaria by 2030, face challenges in the area of acceptability and operational feasibility of the recommended interventions, malaria chemoprevention in pregnancy being amongst them. Such challenges include physical and financial accessibility of the recommended services, besides the perceived quality of care, and social-cultural values such as norms and traditions that excessively suppress women and deny them of their right to access the recommended services in a timely manner. Many studies have focussed on issues of individual and community health seeking behaviour in relation to malaria, in Africa. The study points toward individual or community knowledge, beliefs, perceptions and attitudes or motivation in relation the recommended malaria control approaches. The vast reports available so far have prompted some biomedical science thinkers to view studies of the latter nature as no longer needed as they seem to have no significant value to add to the already established knowledge for policy and programme use. This article aims to contribute to the debate that should lead to a change in this perception and draw the attention of policy makers, programme officers, biomedical researchers, governments and development partners.

Keywords: Malaria, pregnancy, antimalarial drugs, antenatal care, Tanzania

Introduction

Malaria is a protozoan disease, transmitted by female anopheline mosquitoes that inject parasites called *Plasmodium falciparum* (abbreviated as *P.falciparum*) when they bite people. However, transmission from one person to another person happens following a blood transfusion process should a person receive infected blood (Scofield & Grau, 2005; Etyang et al., 2016). Sub-Sahara Africa (SSA) is the major home of mosquitoes carrying the *P.falciparum*, the dominant species (Ito et al., 2002). Over 90% of all malaria cases and deaths recorded globally each year occur in this region (Yimam et al., 2021). In 2020 alone, 241 million malaria cases were recorded globally; of these victims, 627,000 died of malaria. In addition, about 90% were reported from Africa (Jagannathan & Kakuru, 2022). In 2021, an estimated 247 million cases of malaria were recorded globally, of which 234 million (95%) were reported from the SSA region (WHO, 2021). Among the latter cases, 619 died of the disease, 80% of which were children under five years of age (*underfives*) (WHO, 2023). The epidemiological trend has remained that way for years, with virtually 90% of all cases and deaths being recorded in the latter region (Pierre-Louis et al., 2014).

The negative health outcomes and the socio-economic consequences of malaria have spillover effects. The global economy has in one way or another continued to be affected by malaria prevalence, morbidities, deaths and their associated productivity losses. Not only the economic well being of individual patients is negatively affected, but also families lose when there is someone suffering in the family, requiring time to take care of him or her. The worst scenario is when the breadwinner is incapacitated. Additionally, the health sectors of the

¹ Chief Research Officer, National Institute for Medical Research, Tanzania. gmmubyazi@gmail.com

malaria endemic countries have continued to spend huge budgets to contain the disease. This is why prioritizing prevention of malaria infection, health and socioeconomic consequences has become an urgent global agenda of the United Nations.

Besides such efforts, the number of people, of all ages who continue to suffer and die of malaria is still alarmingly high in all SSA countries. Living in high poverty conditions, being a child under the age of five years – ‘an *underfive*’ or pregnant woman are higher risk factors compared to other groups in the society. In 2020, for example, data gathered from 33 countries in Africa showed that of 33.8 million pregnancies, 11.6 million (34%) were exposed to malaria infection, with a little higher rates in West Africa (39.8%), Central Africa (39.4%) and 22% in east and southern Africa (WHO, 2021). While the efforts to prevent malaria using products discovered by biomedical research scientists continue to be acknowledged deservedly, there is an growing flaw in thinking that such studies in relation to malaria are no longer as important today as they were before. For this reason, such studies should receive attention for funding support.

This article seeks to justify why studies focusing on knowledge, perceptions, beliefs and attitudes issues in relation to malaria chemoprevention in pregnancy should receive support in Africa and to address issues of policy and programmes that give more attention to social research on medical issues relating to malaria prevention in pregnant women in Tanzania.

Literature Review

Prioritizing the prevention of malaria in pregnancy (MiP) is scientifically justified in that, during pregnancy, women’s cellular immunity against *P.falciparum* malaria, especially in the placenta region, decreases significantly. The main clinical outcomes faced by women who contract MiP include maternal hypoglycemia, maternal anaemia, inter-uterine growth retardation, foetal anaemia, low birth weight (LBW), preterm birth, stillbirth, and congenital malaria (Mutabingwa et al., 1993; Moya-Alvarez et al., 2014). Complications such as maternal cerebral malaria and maternal hypertensive disorders (e.g. gestational preeclampsia) especially in young primigravid, sometimes occur and eventually result into long-term sequels to the survivors (Sibai et al., 1986; Park et al., 2020). The babies born with a LBW due to their mothers having been infected with the parasites can be hypertensive when they get older (Wang et al., 2008; Davis et al., 2012). In general, babies in their infancy age are highly susceptible to the consequences of congenital malaria than the rest children under five years.

The World Health Organization (WHO) recommends two main strategies to be employed for the prevention of MiP. These include sleeping under insecticide-treated nets (ITNs), and every eligible woman to take the recommended drug as a chemoprevention during pregnancy. According to WHO’s definition, preventive chemotherapy means the use of medicines, either alone or in combination, to prevent malaria infections and their consequences (WHO, 2016). So far, the drug recommended for MiP through the latter strategy/method is *sulfadoxine-pyrimethamine*’ (SP).

Reaching all eligible pregnant women with the latter ‘malaria IPTp-SP’ strategy is a well-meant goal (RBM-WHO, 2015; WHO, 2023) although too ambitious due to the continually experienced numerous and multifaceted barriers. Some of these barriers are healthcare system related (Menendez et al., 2015; Alonso, 2021); others, and the majority, are of social, cultural and economic nature (Pell et al., 2011; Hill et al., 2013; Thiam et al., 2013). The established

IPTp policy and guidelines have also been found to be inadequately understood and sub-optimally translated into action by the frontline HCWs. Again, some women do not attend clinic in time. Another barrier is the presence of social perceptions about pregnancy, risk of MiP, and use of antimalarial drugs such as SP during pregnancy, with a drug safety concern (Thiam et al., 2013; Pell et al., 2011; Aberese-Ako et al., 2021).

Problem Statement

Any decision or attempt to end support to studies aimed at examining the role of individual or community knowledge, perceptions, beliefs, and attitudes as well as the behaviours developed in response to or in adaptation to either or several of these elements should be avoided at any cost. Nieto and colleagues (1999) had the following opinion on research and involvement of the community: *“Research projects for malaria control must involve communities to elicit strategies to be successful and programmes to be sustainable. Therefore, knowledge, beliefs and practices of the population concerned must be taken into account in the design of interventions against malaria transmission”* (p.1).

Conceptual and Theoretical Frameworks

According to Mwenesi (1995), disvaluing the non-biological factors on the generation, survival, transmission and progression of pathogens causing malaria is to get prepared for a policy and programme failure in advance. This view is shared by other experts in the field, for example Acharya and Clerand (2000), Heggenhougen et al. (2003), and Singh et al. (2014). It is difficult sometimes to draw a line separating between knowledge and perception even if this view was criticised by experimental psychologists in that, perception does not necessarily influence behaviour, but the other way round (Enns, 2001; Witt, 2011).

Berliner et al. (2020) refer to work done by other scholars/experts in the fields of social anthropology and social psychology whose theories lay out a foundation stone for those interested in conducting knowledge related studies for policy, programme and/or academic reasons. The latter authors discuss the contradictions or controversies in terms of knowledge, thoughts, beliefs, perceptions, opinions, outlooks, feelings and behaviours. According to them, these elements constitute the fundamental aspects of human life.

Oeberst and colleagues (2016) provide another account on definitions of knowledge and their relevance for field applications. These authors find developments in the conceptualization of the ‘knowledge’ issue, seeing it as continuing to grow as time passes, and involving different disciplinary approaches. Each approach has merits/strengths and weakness/shortcomings. On the one hand, philosophers tend to view ‘*knowledge*’ as a ‘*justified true belief*’, a view criticised for seeming to lean mainly on considering knowledge in terms of semantic memory. Since every person has a brain that has a cognitive capacity likely to be unique, arriving at a simple, single and common conclusion on what knowledge should be whereby all the individuals’ perspective converge is highly tricky and remains critical in most situations or contexts. There are both social elements and the non-social (e.g. biological) elements. People continue to learn by seeing or experiencing observable events or features, reading or hearing from others, and doing or practicing things. Therefore, as we continue to live, we as a people do come to get different lessons, some positive or desired; others negative or undesired.

Thus, a person or a group of people deserves to be labelled ‘*ill-thinkers*’ by holding the claim that what is currently known is enough and therefore there is no need to hear or listen, see or know any more about a given thing or issue. Declaring a knowledge endpoint is to declare

acceptance of preventable ignorance, failure and regret that are likely to happen in future. Therefore, there is no need to avoid learning about, or learning from what we think we already know.

Theory guided experimental studies in the field of psychology have depicted that a person's response to a call for action on a particular health thing or issue may depend partly on how he or she perceives or believes in it and what other persons in the society do perceive or believe about it (Kraus, 1995; LaPiere, 2010; Van Dessel et al., 2019). Researchers in the area of health promotion, for example, have noted this from their investigations, confirming the role of individuals' knowledge, perceptions, beliefs, and attitudes in relation to certain health or social phenomena on influencing their actual participation in the proposed problem-solving strategy (Lim et al., 2021). The theory of planned behavior, technology acceptance model, norm activation model (Fischer, 2017), and health belief model (Janz & Becker, 1984; Jones et al., 2015) have been useful in demonstrating the role of knowledge and its confounding elements on individuals' responses to health calls in terms of their acceptance or rejection of the calls. One of the following models –Health Belief Model (HBM), Protection Motivation Model (PMM), Common Sense Model (CSM), Trans-theoretical Model (TTM), among others do each demonstrate how an individual's perceived susceptibility to exposure to certain health risks or a disease-related illness and the consequences arising from it on one hand, and the ability to cope with the situation if exposed by taking the proposed measure against it, do influence that individual's ultimate decision to behave in a certain way by responding positively or negatively to the call made to him or her (Anuar et al., 2020). All these models are useful if tested by researchers aiming at obtaining empirical or systematic evidences on why individual healthcare clients perceive or believe about a health product or policy being promoted. The present article presents some research findings and discusses them in line with these conceptual and theoretical facts from a malaria in pregnancy chemoprevention strategy's acceptability and practicability dimensions.

Methodology

This article presents facts and discusses them based on a combination of primary and secondary research data and different scholars' viewpoints and recommendations. So far, several systematic reviews and meta-analyses have been done, with comprehensive information on the topic of malaria chemoprevention in pregnancy issues in SSA. The reviews or meta-analyses came from research studies done in Tanzania, the methodological approaches employed in such studies having been documented elsewhere (Mubyazi et al., 2005; Mubyazi et al., 2008a; Mubyazi et al., 2010; Mubyazi et al., 2012; Mubyazi & Bloch, 2014; Mubyazi et al., 2014; Mubyazi, 2015). Nevertheless, up-to-date information on the status of knowledge and behavioural related issues in relation to malaria chemoprevention in pregnancy has come from search over the internet.

Findings and Discussions

Controversial views about the recommended malaria chemoprevention in pregnancy

Mubyazi et al. (2005) inferred that a sub-optimal information packaging or information sharing status contributed to low levels of the acceptability, deliverability and actual uptake rates of the recommended IPTp-SP doses in Tanzania and possibly elsewhere in SSA. His findings were confirmed by evidence from surveys carried out across a number of countries in the SSA where other researchers had a similar view for research and policy purposes (Hill & Kazembe, 2006). Subsequent research studies, systematic reviews and meta-analyses came

to illuminate the same observation (Mubyazi et al., 2008b; Pell et al., 2011; Hill et al., 2013; Thiam et al., 2013; Kalu et al., 2022).

In line with the themes organized for results presentation and accompanied discussions, Box 1 lists down the key areas in which questions or concerns were expressed by the participants in studies done so far across SSA, based on cross-sectional and longitudinal studies as well as the meta-analyses and systematic reviews conducted based on such studies.

Box 1. Key areas in which the research participants expressed varied views about malaria IPTp in SSA countries

- Likelihood of malaria in pregnancy leading to regrettable pregnancy health outcomes
- Logic behind or advantages of using SP for the prevention of MiP
- Appropriateness and risks of using SP for preventing and/or for treating MiP
- Standard number of the SP tablets/pills per single dose
- Standard number of doses of SP for malaria IPTp purpose
- Timing of the first dose of SP and the last one for malaria IPTp
- Risks of mixing use of conventional and traditional drugs for treating MiP
- Added value (advantage) of IPTp-SP while still using ITNs and other methods
- Relevance of continuing with SP for malaria IPTp while already SP is facing resistance
- Booking time for ANC services and resultant advantages

The delay or failure to attend ANC/MCH clinics has hindered timely access to information on pregnancy care and in particular on IPTp-SP usage (Diala et al., 2013; Sahu et al., 2020). This justifies what Bruce-Chwatt (1987) remarked earlier, that poor knowledge may exist because of a lack of access to proper health information and in a timely manner.

Likelihood of MiP Leading to Regrettable Pregnancy Health Outcomes

It is important to be aware that there are still many public/community members who do not believe in the scientifically reported dangers or risks of malaria, and particularly, MiP in the SSA countries. These frustrate efforts towards measures recommended for malaria prevention and/or treatment (Heggenhougen et al., 2003; Singh et al., 2014). Understanding the reasons behind the observed mistrust in the reported risks of malaria can help to add insights towards identifying or designing better approaches for changing such people's mindset and their eventual behaviours. It is necessary to continue making efforts of designing and packaging the information that is persuasive enough, targeting the key influential people in the community, to remove the prevailing doubt amongst them about the seriousness of malaria, especially in certain situations such as during pregnancy and early childhood. The existing health education and promotion programmes have to be more innovative in packaging the messages and using message delivery/communication tactics and models that are proactive in nature to convey the right messages to the intended population.

Message Packaging Quality

As posited by the Health Belief Model (HBM), messages will be able to achieve optimal behaviour change if they succeed to target perceived barriers, benefits, self-efficacy, and threats (Jones et al., 2015). One can consider a scenario whereby messages are given by the authorized parties such as communicating institutions and HCWs, but their delivery is found to be insufficient for the recipients (audiences) targeted by them to understand, appreciate the meaning and act accordingly. The messages given may seem or sound ambiguous or insufficient or complicated, for example, by not being specifically guiding on what exactly to

do or when to do what and by whom or how. From Kenya, Okello et al., (2018) report a study done in two counties having found the unclear recording and reporting instructions leading to a lack of standardization in the IPTp data generation. A similar observation was made in Mufindi and Mkuranga districts in Tanzania (Mubyazi and Bloch, 2014), Ghana (Mohamed et al., 2022; Aberese-Ako et al., 2022), Kenya (Okello et al., 2018), and in several other SSA countries (Al Khaja & Sequeira 2021).

Message Delivery Feasibility

Sometimes, the attitude and motivation of the service provider to educate or sensitize the audience is found to be low, not because the respective provider is not informed or knowledgeable of what he or she is supposed to share with the targeted audience. A well-intended health or policy statement carrying a particular health message may not be delivered in a clearly understood form simply because of the weakness or the negligence of its conveyer/communicator. A scenario has, for example, been noted whereby the HCWs find themselves being too occupied with several tasks to perform at the service delivery point to the extent that they forego necessary information to their clients. In Ghana, a study by Mohammed et al. (2022) found that about 57% of the 315 HCWs did not inform pregnant women about the next IPTp dose and visit. Failure to give health education and other basic information in relation to IPTp and other pregnancy care requirements was also found in Mkuranga and Mufindi districts, in Tanzania (Mubyazi and Bloch, 2014, where the overcrowding of patients at the HCF drew the attention of the same HCWs who were responsible for attending pregnant women and lactating mothers at the MCH clinics. Such workers found themselves having no option of not postponing or shortening the health education sessions on certain week days in order to ensure that they cover all the clients for at least a given level of the services they needed. By so doing, they appeared attending the clients in a rushing manner and even seeming to be negligent to some of the clients while they were actually overloaded due to their fewness at the understaffed HCF (Mubyazi et al., 2012).

Additionally, in Africa and most of the rest low-and-middle-income countries (LMICs), a considerable number of public members live in remote settings with limited road and other infrastructural facilities, a condition that limits their access to basic health services delivered at the conventional HCFs located mostly in urban and peri-urban centres (Kwast, 1996). Efforts have continued to be made in the respective countries to take at least some of the services to remote settings through mobile/outreach clinic programmes. For health information delivery, a supplementary approach could be to reach people residing in such settings by means of mobile phones since the radio alone cannot suffice the need. Pregnant women and lactating mothers could receive some educational and reminder messages through an established tele-healthcare system. This approach has been tried out, with a demonstrable achievement in improving the ANC attendances and coverage of pregnant women receiving more doses of IPTp in areas where it has been tested e.g. South Africa (Quan et al., 2014) and Burkina Faso (Ouédraogo et al., 2022).

Message Delivery Deliberately Undermined by Communication Channels

The client's/patient's charter explicitly states the right patients deserve to access correct information about the services given in the protection of their health (Creel et al., 1996; Price et al., 2014). The outstanding question has been the type of information that should be disclosed by practitioners or doctors to patients, especially on sensitive issues (Faden et al., 1981). The advantage of giving information on medication safety and pharmacovigilance

issues to patients, for example, has the advantage of making them feel actively involved in the therapy recommended and widening the chance for their compliance with the treatment guidelines (Jose & AlHajri, 2018).

Message Delivered Unaccepted or Untrusted by Target Recipients and Users

Sometimes the message gets well conveyed as the guidelines direct, but recipients are not ready to take it, either at all or in the same way it was delivered, for reason known to themselves. For instance, from a study done with the aim of finding out the factors influencing the anticipated acceptability of a community-based approach to the delivery of IPTp-SP through community health workers (CHWs) in four sub-Saharan African countries, one of the factors found to underpin communities' trust in latter IPTp-SP delivery approach was 'perceived competence' of such workers (Enguita-Fernández et al., 2021). Similarly, Mubyazi (2015) reports from a study done in Mkuranga and Mufindi districts, Tanzania, whereby pregnant women and lactating mothers were concerned about the inability of the HCWs serving ANC clients to deliver the health educational messages in appropriate ways.

Risks of Using SP for Preventing or for Treating MiP

There is so far consistent reporting of the malaria IPTp-SP strategy being partly undermined by the prevailing myths and misconceptions about SP's safety in all communities surveyed in throughout SSA (Pell et al., 2011; Hills et al., 2013; Thiam et al., 2013; Aberese-Ako et al., 2021). This reflects a gap in health education and sensitization on MiP and its prevention and treatment approaches. MiP is partly perceived by some of the community members as not being highly risky as scientists and health authorities proclaim. Likewise, there is a group of HCWs who are also not happy seeing SP remaining approved for MiP prevention because of not trusting in its safety and/or its treatment ability. Studies done in Uganda (Mbonye et al., 2006), Tanzania (Mubyazi et al., 2013), Malawi (Almond et al., 2016), Mali (Doumbia et al., 2021), and in several other SSA countries (Hill & Kazembe, 2006; Faye & Lugand, 2021) verify. Exposure to a spreading information about the scientifically evidenced SP resistance (Rogerson and Unger, 2017; Alonso, 2021) may be one of the contributing reasons for a lowering trust in SP's treatment potential (Al Khaja & Sequeira, 2021; Plowe, 2022).

Further in Mubyazi's Mkuranga and Mufindi districts study case in Tanzania (Mubyazi, 2010), incidences of the HCWs attending pregnant women hesitating to disclose some information including the possible, albeit rare and mild SP's side-effects were noted. The hesitant HCWs claimed to do so in fear of the sceptical clients who after hearing about that could opt to refrain from taking the pills given for IPTp, if allowed to take the pills at home, or by pretending to have faced allergy after using the pills offered at the clinic before (Mubyazi & Bloch, 2014). Elizeus Kahigwa's survey, in Tanzania also, noted the same picture (WHO-Country Office, Tanzania, 2005). A similar attitude overruling the focused ANC guideline's recommendation of adhering to the DOT algorithm has been reported from the studies done in other SSA countries such as Nigeria (Onoka et al., 2012), Kenya (Okello et al., 2018), and Ghana (Aberese-Ako et al., 2021; Mohammed et al., 2022), to mention a few.

The existing mass media (Yaya et al., 2021; Umeano-Enemuoh et al., 2015) and social media (Hale, 2021) are part of the sources or channels through which good news and the bad ones spread out quickly. A few cited survey reports depict a need for finding out alternative or more innovative approaches for convincing stakeholders concerned to continue trusting in SP for malaria IPTp becomes obvious. It does not suffice to inform the policy and programme

authorities of the contemporary or the trending situation of public doubts about SP usefulness during in pregnancy. From common sense viewpoint, people are likely to think twice or move some steps back asking themselves what will happen if they consume a given drug, especially if there are reports about its actual or its possible side-effects or treatment failure. This is not a bad thing. What the authorities need to be aware of is that, any reported badness about a conventional drug leads to fears about the health outcomes of its users. Such a fear tends to spread out quickly in the community, leading to a certain degree of confidence in the drug, and to a number of community members avoiding or stopping to use it. To demystify the unscientifically grounded allegations or retrieving the information wrongly spread out from people's minds is not easy.

Lay people, also interact with the trusted HCWs such as physicians, nurses, pharmacists and allied workers. During their interactions, they share news or information. Imagine someone meeting a HCW expressing a concern about a given drug, if the person is lay in the medical or a medical-allied field, obviously he or she will develop a trust in that HCW. The same applies if someone meets with a trusted colleague, friend, a co-worker, a schoolmate, a leader, or a neighbour reporting negatively about a given type of medicine or a medical practice and by virtue of the position, training background, experience, or other merits, trust in him or her to have the right information on what is being said is likely. The challenge come if the trusted person is also uninformed (Mwendera et al., 2017; Faye and Lugand, 2021; Aberese-Ako et al., 2021; Abesere-Ako et al., 2021; Mohammed et al., 2022). On the other hand, one can agree with me that, literate people with a custom of reading scholarly health related textbooks, journal articles, magazines, and other documented materials such as reliable newspapers get excited or alerted if they read about sensitive and alarming health matters including those relating to drug use for a disease prevention or treatment. They may use the reports in either ways, positively or negatively, depending on how they value and perceive the contents presented therein. Therefore, any misuse of a proper information or use of an improper one results into certain misinterpretations that have a negative bearing on the translation of such an information into a good practice. It becomes an advantage if the information shared is real and positive. This can be impressing, to contribute to the acceptability of the intervention or a strategy being promoted (Aberese-Ako et al., 2021). Otherwise, the wrong and negative one misleads the parties receiving it, either directly from the sources or indirectly through other people in the community (Nieto et al., 1999; Mubyazi et al., 2005; Chen et al., 2007).

Standard Number of the SP Tablets/Pills Per a Single Dose

In a Tanzanian case study done in Mkuranga and Mufindi districts reported to find some of the HCWs especially those working at dispensary level ANC clinics asking the interviewers to comment about the actual dose appropriate for the pregnant women found to have very low body weights (*this being unpublished a prior*) as well as those claiming to be allergic with SP or to have taken SP shortly before attending clinic (Mubyazi & Bloch, 2014). The inquisitive HCW believed in the three tablets dose likely to overdose the clients described in either of the latter two scenarios (Mubyazi, 2010).

Standard Number of Doses of SP for Malaria IPTp purpose

A study done earlier in 37 SSA countries found 31 (84%) having guidelines recommending 2 standard doses of IPTp-SP before the WHO has recommended with emphasis a standard of 3 or more doses (WHO, 2016). Among the clinical epidemiologists involved in such studies and the subsequent debates, questions have been raised regarding the added benefit of administering three or more doses of SP for IPTp (WHO, 2013), and of continuing with SP

for IPTp instead of other potential drugs (Augusto et al., 2020). The conclusion remained to be that SP is still a safe, efficacious and effective drug for malaria IPTp and three or more doses are advantageous over only two doses. However, the trending SP resistance growth and the potentials demonstrated by drugs that could act as alternative to SP raise another concern (Kayentao et al., 2015).

Meanwhile, the limited or improper translation of the IPTp-SP policy guideline at the grassroot (e.g. HCF) level has continued to be documented from different SSA countries. Researchers report a number of HCWs interpreting the guideline specifying administration of ‘*at least two doses*’ of SP for malaria IPTp to each eligible pregnant woman attending ANC clinic, initially stated so by in the WHO Guideline for ANC (WHO, 2012) and then adopted by the nations in their ANC guidelines as meaning strictly two doses. Mubyazi et al. (2012) report a study done in two districts, Tanzania, that found HCWs administering 3 IPTp-SP doses while others stuck to delivering only 2 doses and this different practice having rooted anchored in such providers’ different interpretations of the existing national guideline and their different exposures to IPTp-SP administration directives. In Malawi (Mwendera et al., 2017) and other SSA countries (Abereso-Ako et al., 2021) a similar gap in IPTp-SP administration knowledge (including the DOT adherence requirement and the timing of the stating dose and the subsequent ones) was found. This is why the WHO came out (WHO 2012; WHO, 2013) and continues to come out with to clarifications and updates on the requirements (WHO, 2022).

Timing of the First Dose of SP and The Last One for Malaria IPTp

Meanwhile, the inabilities of some frontline HCWs to administer IPTp-SP has continued to be reported from virtually in all the countries in which the studies were done with a focus on, among other things, the capacity of the frontline service providers (HCWs) to adhere to the IPTp-SP guideline’s recommendations, including the DOT algorithm, the timing of the doses, and eligibility of pregnant women based on gestational ages and other health requirements. The non-compliance in either of these has been found, and being partly due to such service providers not having a sufficient information on what to do and how. The guideline has either been confusing in that they seem(ed) ambiguous in terms of their statements’ phrasing and the content of the messages lacking specifying directives, as noted from Ghana (Aberese-Ako et al., 2021; Mohammed et al., 2022), Kenya (Okello et al., 2018; Hill et al., 2013), Tanzania (Mubyazi et al., 2008a), Mali (Doumbia et al., 2021), Malawi (Mwendera et al., 2017), and several other SSA countries (Hill & Kazembe, 2006; Thiam et al., 2013; Al Khaja & Sequeira, 2021).

Risks of Mixing Use of Conventional and Traditional Drugs for Treating MiP

It is common in Africa for people of all traditional categories to practice self-medication for malaria, this being one considered as one of the drug-resistance contributing factors (Almond et al., 2016). What was found to be missing as of today is the research evidence on what happens or has happened to the people (amongst whom are pregnant women) who have been using or those continuing to use the traditional medicines/drugs they are accustomed to use, and doing so concurrently with the prescribed or the self-procured conventional ones.

Added Value (Advantage) of IPTp-SP while still using ITNs and Other Methods

In the Mkuranga and Mufindi districts case study, Mubyazi (2010) found out the HCWs serving in the ANC clinics wanting to know themselves, after meeting questions from their

clients who also wanted a justification about, the reason for SP to be recommended for malaria IPTp while for a long time the authorities emphasized on health education and sensitization to continue in pursuit of encouraging the people to sleep under ITNs and doing so consistently. Such workers testified also meeting the clients questioning about IPTp-SP under DOT system since there have been a warning against anyone using drugs prescribed at unreliable sources or those procured from retail vendors for self-medication purposes without one having undergone a blood-based test to confirm a malaria diagnosis. Data collectors in this study noted the same questions from some of the study participants, especially during the village based FGDs with pregnant women and mothers of small children. Thus, to such individuals and their HCWs who shared the same concern, IPTp-SP seemed contravening the latter warning.

Booking Time for ANC Services and Resultant Advantages

The extant literature reports mixed evidence in Africa on the association between the timing of the first ANC visit and the number of IPTp-SP doses taken/administered to the respective ANC clients. In some studies, an association was noted to exist while in other studies it was not. However, the observed variations in the evidence was contributed by the design of the study in terms of place, duration, and population coverage based on particular inclusion and exclusion criteria as well as the nature of the analyses performed under each study whereby the interactive effects of modifier or confounding variables such as socio-demographic characteristics relating to respondents/participants' parities, ages, marital status, wealth, education, etc. have not been uniformly examined (Nkoka et al., 2021). Nevertheless, both the original studies and the meta-analyses performed based on data gathered from such studies generally confirm late booking tendency and irregular (inconsistent) ANC visits as one of the key barriers to the uptake of the first dose and the rest of the doses of IPTp-SP as recommended (Kanyangarara et al., 2017; Nkoka et al., 2021; Jinga et al., 2019). Social-cultural values such as norms, beliefs and traditions hindering pregnant women to act timely (Pell et al., 2011; Finlayson & Downe, 2013; White et al., 2013) and factors relating to how the quality of ANC is perceived (Thiam et al., 2013; Tuncalp et al., 2015) are reported to contribute. This picture implies how education on the sensitiveness of pregnancy care is still low and the need reconsidering or evaluating the degree to which the messages communicated to educate and sensitize the public especially women and their family supporters are packaged and actually delivered. There is a need also to find out the educational and sensitization approaches employed, whether the messages concerned are delivered in easy to understand language, passed over to the targeted audiences by the conveyors with the capacity and a motivation to do so, delivered in the right time in terms of convenience of the audiences targeted to receive them.

Conclusions and Recommendations

As observed earlier (Acharya & Clerand, 2000), maternal and child health interventions do not succeed to the levels and manners envisioned partly due to their design and institutionalization being based on the evidence from studies looking at the efficacy and clinical outcomes of a given intervention, with little or no emphasis on studies looking at the knowledge and skills of service providers as well as the knowledge, beliefs, perceptions, attitudes and health seeking behaviours of the population targeted to respond positively to the intervention being promoted. For some reason(s), there are yet biomedical sciences-oriented researchers, scholars, policy-makers and programme officers considering studies that focus on the latter knowledge and its confounding elements in relation to malaria as being less

important for the time being (Mwenesi 1995; Lees et al., 2023) and not rationalizing a need for policy and programme support including funding. This is a flawed and counterproductive view. Such stakeholders have to be first of all aware that, knowledge is a time bound condition, changing as time goes, varies according to conditions or events, varies in degrees or levels in both the individual concerned and between or among individuals. They also have to appreciate that, having knowledge is one thing, but translating it into action in a way expected by everyone is another thing partly because of what a person perceives, experiences, and hears from others. Therefore, to recommend a stopping of the support to social studies looking at the aforementioned aspects in the midst of the emphasis on strengthening the promotion of malaria interventions is likely to lead to regret in future. The so far extant systematic evidence reveals how doubt about use of SP for MiP prevention and cure exists not only in people categorized as ‘lay in the field’, but even among the service providers (HCWs) and their managers (Mubyazi et al., 2012; Mwendera et al., 2017; Al Khaja & Sequeira, 2021; Mohammed et al., 2022). Through undertaking studies focusing on the aforementioned components/elements, important feedback can be obtained to inform and guide authorities involved in policy creation or review and those responsible for design of the policy implementation guidelines and policy implementation strategies (Mwendera et al., 2017; Faye & Lugand, 2021). Moreover, the techniques used for inviting the key stakeholders to express themselves in light of the questions posed and to give their opinions can take it as a chance for airing their voices that can be heard at higher levels, making the opinion givers concerned to develop a feeling of being respected and valued to have a role to play in policy creation and planning interventions aimed for disease control.

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