Community responses to malaria: interventions in sub-Saharan Africa

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Chapter two

Social and cultural factors affecting uptake of interventions for malaria in pregnancy in Africa: a systematic review of the qualitative research

Published as:

Introduction
Malaria during pregnancy (MiP) is a major global health concern, resulting in adverse birth outcomes and poor maternal health [1]. In 2007, worldwide, over 125 million pregnancies occurred in areas of malaria transmission [2]. However, the morbidity and mortality caused by MiP is most pronounced in endemic regions of sub-Saharan Africa [3]. MiP compounds or provokes maternal anaemia, which when severe, increases the risk of maternal death: it has been estimated that malaria-related anaemia causes around 10 000 maternal deaths annually [4]. MiP can also result in low birth weight (estimated to cause around 100 000 infant deaths in Africa [4]), pre-term delivery, congenital infection and reproductive loss [3].

In spite of its significance for maternal and infant health, MiP has been viewed as a neglected area of study [5]. The MiP Consortium was therefore established to address the need for coordinated research on MiP. This global initiative, made up of 47 institutions, is undertaking a five-year programme of research (2007-2012) to evaluate new and to improve existing interventions for the prevention and treatment of MiP [6]. This review is part of the social science component of the consortium’s Public Health Impact theme.

The suitability of MiP interventions depends primarily on the local disease context and prevailing levels of drug resistance. Current recommended malaria prevention for pregnant women in areas of stable moderate to high transmission include the administration, after quickening, of at least two doses of intermittent preventive treatment (IPTp) as part of routine antenatal care (ANC) [7]). In spite of questions posed by increasing resistance and other concerns, due to the lack of available efficacy and cost effectiveness data for other drugs and its consistent effectiveness [8], Sulfadoxine pyrimethine (SP) is currently used for IPTp in many sub-Saharan African countries [9]. The WHO also recommends that pregnant women receive insecticide treated bednets (ITNs), preferably long-lasting insecticide-treated nets (LLINs), as part of routine ANC, and that they are used throughout pregnancy [10]. Current recommended therapies for appropriate MiP case management include (for uncomplicated falciparum malaria) quinine/artesunate plus clindamycin and locally effective artemisim combination therapies (ACTs) [11]. The most appropriate treatment however depends on gestational age, the malaria species and severity, local patterns of drug resistance and drug availability [12].

Coverage targets set for MiP interventions have commonly not been met and challenges are yet to be overcome to ensure their effectiveness. The Roll Back Malaria “Abuja” target set in 2000 aimed for 60% coverage of recommended MiP prevention and treatment by 2005 [13] and was subsequently increased to 80% by 2010 [14]. However, data from 2004 to 2009 suggests that, in spite of national policies for prevention and control of MiP (and the limitations and
scarcity of available nationally representative survey data), insufficient progress has been made towards the targets for coverage of IPTp and ITN use during pregnancy: 25% of pregnant women received at least one dose of IPTp and, overall, coverage was lowest in areas of highest malaria transmission [15].

The effectiveness of MiP interventions, as is the case of all health interventions, not only relies on their clinical efficacy, but also on a range of factors, such as the attitudes and behaviours of target groups, and of the wider community (including those implementing interventions) [16]. Attitudes and behaviours towards interventions are often shaped by social and cultural factors and such factors are particularly relevant to the demand for and supply of MiP interventions: attitudes towards and understandings of pregnancy, pregnancy care, malaria and other illnesses can interact and influence how, where and when pregnant women seek malaria prevention and treatment. Furthermore, the social and cultural context has important implications for the provision of malaria prevention or treatment, whether as part of routine ANC at a health facility or care sought from a local healer [17].

Data on knowledge and perceptions of MiP and the response to MiP interventions have generally been collected using (more) quantitative methods, such as questionnaires, with comparatively little research based on (more) qualitative methods (for example, in-depth interviews, focus group discussions or participant observation) focusing on MiP [5,17,18,19]. Examples of findings from questionnaire-based research include: women’s limited knowledge about the health consequences of MiP [20]; ANC health workers’ lack of familiarity with IPTp [21,22]; and the association of sleeping under a bed net when pregnant [23,24,25,26] or receiving IPTp [27] with education and/or wealth. However, qualitative research that situates behaviour in its context is also necessary in order to give insight into complexities highlighted by quantitative research. For example, surveys in Malawi and Kenya have revealed high ANC attendance (88% and 74% respectively), yet a far lower proportion of women receive two doses of IPTp with SP (44% and 22% respectively) [27,28]. In this case, a qualitative approach could supplement quantitative research by exploring the factors that affect uptake of MiP interventions even when pregnant women reach the clinic for ANC. Qualitative research is therefore an important tool to inform policies aimed at meeting the updated Abuja goals for recommended MiP prevention and treatment [14].

Reviews of the social science literature on malaria control and prevention in sub-Saharan Africa have revealed the increasingly important role of the social sciences in the study of behaviours related to the diagnosis, treatment and prevention of malaria in sub-Saharan Africa [18,29,30]. Yet the reviews also identify significant research gaps and a lack of translation of findings,
particularly from qualitative research, into policy [18,19,29]. These reviews are not however focused on pregnant women; the only review of the social science literature on MiP relied on personal fieldwork experience and a non-systematic search strategy to develop models for qualitative approaches to research on factors affecting MiP [17]. To the authors’ knowledge, no systematic review of the qualitative literature on MiP in sub-Saharan Africa has yet been published.

This article aims to provide a comprehensive overview of qualitative research on the social and cultural factors relevant to the uptake of MiP interventions in sub-Saharan Africa. Specific objectives include the identification of qualitative studies using a systematic search strategy, the description of the current state of qualitative research, and, using a meta-ethnographic approach, the synthesis of study findings and their organization along relevant themes identified from the studies. This will enable the identification of gaps in the qualitative research, the discovery of complementary or contradictory findings and the development of priorities for further research. The review is restricted to sub-Saharan Africa, because, as a result of epidemiological and structural factors, this is the region where MiP-related morbidity and mortality is most pronounced [3]. The review focuses on social science research based on qualitative methods to ensure the synthesis of findings is manageable, to draw attention to a neglected body of research and to identify the gaps in qualitative research. For practical reasons the review is restricted to English language literature.

Methods

Identifying relevant literature
Literature was identified through searching a range of databases. Searches were undertaken using OVID SP [31] and ISI Web of Knowledge [32] (see Appendix 1 for the complete list of databases). Searches were also carried out using CSA ILLUMINA ASSIA (Applied Social Sciences Index and Abstracts), CINAHL (the Cumulative Index to Nursing and Allied Health Literature) and The Cochrane Library. An additional search was undertaken using the MiP Consortium online library; searching this comprehensive bibliographic database that includes published and unpublished MiP-related literature [33] (most recent update, at time of search, 17th April 2010) ensured that MiP-related research that was not accessible through conventional databases was included. The search terms used are detailed in Table 1. Test searches were carried beforehand to refine the search terms and ensure that relevant studies were captured.
Table 1. Search terms used and databases accessed

<table>
<thead>
<tr>
<th>OVID SP, ISI Web of Knowledge†, ASSIA, CINAHL, and The Cochrane Library</th>
<th>MiP Consortium Library</th>
</tr>
</thead>
<tbody>
<tr>
<td>Africa OR African OR Angola OR Benin OR Botswana OR Burkina Faso OR Burundi OR Cameroon OR Cape Verde OR Central African Republic OR Chad OR Comoros OR Congo OR Cote d'Ivoire OR Djibouti OR Eritrea OR Ethiopia OR Gabon OR Gambia OR Ghana OR Guinea OR Kenya OR Lesotho OR Liberia OR Madagascar OR Malawi OR Mali OR Mauritania OR Mauritius OR Mozambique OR Namibia OR Niger OR Nigeria OR Rwanda OR Sao Tome OR Principe OR Senegal OR Seychelles OR Sierra Leone OR Somalia OR South Africa OR Sudan OR Swaziland OR Tanzania OR Togo OR Uganda OR Zambia OR Zimbabwe</td>
<td>qualitative OR sociolog* OR ethnograph* OR anthropolog* OR narrative OR focus group* OR interview* OR perception* OR belief* OR attitude*</td>
</tr>
<tr>
<td>AND pregnant OR maternity</td>
<td>AND Africa</td>
</tr>
<tr>
<td>AND qualitative OR sociolog* OR ethnograph* OR anthropolog* OR narrative OR focus group* OR interview* OR perception* OR belief* OR attitude*</td>
<td></td>
</tr>
<tr>
<td>AND Malaria</td>
<td></td>
</tr>
</tbody>
</table>

†The ISI search was separated into two searches because these databases do not permit the inclusion of more than 50 Boolean operations in a single search.

Citations and abstracts were downloaded into Endnote X2 and duplicates identified and deleted. All titles and abstracts were read and the following inclusion criteria were applied: original research; relating to MiP; about social or cultural factors relevant to the uptake of MiP interventions; conducted in an African site; employed qualitative methods and findings were derived from qualitative methods; and English language. Methods considered to be qualitative were interviews, focus group discussions, observations (including participant observation), ethnography and participatory methods (including free-listing, mapping and identification exercises). Access to the full text of the remaining articles was sought and the articles read and the inclusion criteria applied again. The full text of nine articles could not be accessed. Details of these articles can be found in Appendix 2. (See Figure 1 for a review of the article inclusion/exclusion process).

For articles that, in addition to relevant data, presented data that were unconnected to the uptake of MiP interventions, findings based these data were excluded from this review. If an article reported findings based on qualitative and quantitative methods, only findings based on the qualitative data were reviewed.

Figure 1. Flow chart of the review process
Analysis

A meta-ethnographic [34] approach was taken to analyzing and synthesizing the qualitative findings from the included articles. Meta-ethnography provides an alternative approach to traditional narrative reviews and is increasingly used for the synthesis of qualitative findings, for which the techniques of meta-analysis, applied in reviews of quantitative research, are not appropriate [35,36,37]. A meta-ethnography endeavours to go beyond individual studies’ accounts of phenomena, producing novel insights, yet also seeks to preserve the detail of the original studies [34]. In the first instance, included articles were read by two authors and initial data retrieved and tabulated (including the articles’ aim, methods, participants and location, see Appendix 3). Articles were classified according to their main topic and location of data collection (see Table 2). Key themes and concepts were then identified from the articles. These key themes and concepts were used for the reciprocal translation of the studies, whereby they were mapped across the other articles in order to understand how the articles relate to one another (see Tables 3-5). The quality of the articles was independently assessed by two reviewers using a standardized grading scheme [38]. Ten areas (title and abstract; introduction and aims; method and data; sampling; data analysis; ethics; bias; results; transferability or generalizability;
and implications and usefulness) were awarded grades ranging from one (very poor) to four (good), providing a maximum score of 40. In cases of grading discrepancy, the two reviewers discussed the scores and when an exact score could not be agreed on, a mean was taken of the two scores.

Table 2. Main topics of the articles reviewed

<table>
<thead>
<tr>
<th>Region</th>
<th>West Africa</th>
<th>East Africa</th>
<th>Southern Africa</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>MiP treatment or prevention</td>
<td>4</td>
<td>8</td>
<td>2</td>
<td>14</td>
</tr>
<tr>
<td>Malaria treatment or prevention</td>
<td>4</td>
<td>12</td>
<td>1</td>
<td>17</td>
</tr>
<tr>
<td>ANC service use</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anaemia during pregnancy</td>
<td>1*</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Reproductive loss</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>9</td>
<td>24</td>
<td>4</td>
<td>37</td>
</tr>
</tbody>
</table>

*One article, included in MiP, focused equally on malaria and anaemia during pregnancy.

Results

The nature of the evidence

Of the 37 studies reviewed, 14 focused on MiP, its treatment or prevention. The remaining studies dealt tangentially with MiP, as part of the broader topic of malaria treatment and prevention, factors related to ANC service use, anaemia during pregnancy or reproductive loss (see Table 2 for details).

The majority of the studies were carried out in East Africa (24 of 37). The geographical bias is largely explained by the number of studies that have been undertaken by the same or similar research teams: six of the articles from Uganda have the same lead author (and several of these are based on the same data) and three of the studies from Tanzania have the same lead author. Nevertheless, there is a paucity of research from southern and central Africa, and only three studies from francophone countries.

The studies relied largely on individual (33) and group interviews (31) and a minority of studies (7) utilized qualitative data from observational methods, including participant observation. Twenty-two studies employed quantitative data collection techniques (questionnaire-based surveys) in addition to the qualitative methods and six of the nine articles that employed only one type of qualitative methods also collected data using quantitative methods. A variety of respondent types participated in the studies: pregnant women, community members, opinion leaders, traditional birth attendants (TBAs), health workers.
and policy makers. However, of the 37 articles reviewed, only 17 included pregnant women as a specific group of respondents.

Despite the overall paucity of qualitative research on MiP in sub-Saharan Africa, as can be seen in Table 6, during the last 20 years there has been an increase in studies, most markedly over the last five years.

Table 6. Year of publication of the articles reviewed

<table>
<thead>
<tr>
<th>Year published</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006-2010 (May)</td>
<td>21</td>
</tr>
<tr>
<td>2001-2005</td>
<td>10</td>
</tr>
<tr>
<td>1996-2000</td>
<td>4</td>
</tr>
<tr>
<td>1991-1995</td>
<td>2</td>
</tr>
<tr>
<td>-1990</td>
<td>0</td>
</tr>
</tbody>
</table>

Based on the standardized grading scale [38], the reviewed studies were, on average, of fair quality (mean score 30.2/40 N=31). The formats (study reports or theses) of six studies prevented their grading. Two studies from the 1990s received the lowest score of 25/40 [39,40] and one study from 2008 received the highest score of 35/40 [41] (for a complete list of the grading scores see Appendix 3). The studies, particularly earlier studies, lacked details of any efforts undertaken to minimize bias and of ethical issues. The explanations of sampling procedures utilized were also limited.

Qualitative synthesis of findings

Based on the organization of the articles and their findings, the synthesis of qualitative findings is divided into several topics that influence the uptake of MiP interventions: concepts of malaria and risk in pregnancy; attitudes towards malaria prevention and treatment; perceptions of ANC services; and structural factors affecting the delivery and uptake of MiP interventions. As the principal MiP interventions are delivered as part of ANC services, their success will depend on appropriate ANC attendance and therefore factors affecting ANC service use are included in the synthesis.

Concepts of malaria and risk in pregnancy

Several studies confirmed the common observation that local disease categories often do not correspond to biomedical definitions of malaria (and MiP). In rural southern Malawi the term used to describe malaria, malungo, implied a common and fairly harmless illness [42]. In south-western Uganda, omusujia, the word used to translate malaria, referred to any kind of fever or feelings of illness [39]. And Mbonye and colleagues [43] also described how, in central Uganda, through
a blurring of disease categories, *omusujia* represented all types of fever. Okrah and colleagues [44] reported that in north-western Burkina Faso no “one-to-one equivalent of the biomedical concept of malaria” existed in any of the local languages. The broad term *soumaya* was therefore used in malaria related public health discourse, yet this condition encompassed a very wide range of symptoms [44]. On the coastal plain of Tanzania, respondents talked about *their* diseases and the diseases of outsiders (referring to foreign and Tanzanian internal migrants). The term linguistically closest to malaria and that used for public health education, *homa ya malaria*, was considered to represent a disease of outsiders. Moreover, *homa ya malaria* was not actually associated with malaria or anaemia during pregnancy [40]. Participants in Tolhurst and colleagues’ study in southern Malawi attributed pre-term delivery to both “modern” and “traditional” illnesses, of which malaria was categorized as “modern” [45].

Local disease categories for fever and malaria can have implications for treatment or prevention seeking behaviour. For example, respondents from two areas in southern Ghana divided malaria into two types of fever, “common” fever and “male” fever; the former was relatively easy to cure with herbs at home, whereas the latter required attention from a health provider [46]. In Tanzania, the internal migrants, who used the “outsider” disease categories, which included *homa ya malaria* (malaria fever), were reported to show higher levels of ITN ownership and re-treatment [40].

Respondents from a number of study sites associated mosquito bites with malaria (or the local disease category that included malaria) (e.g. [39,42,43,47]). However, in several settings, other factors were viewed as playing a role: in south-central Ethiopia, a lack of food during the fasting season and unhygienic practices were linked to malaria infection (or *busaa* as it was locally termed) [48]; in southern Ghana, exposure to heat, poor hygiene and evil spirits were important factors [46,47]; Kengeya-Kayondo and colleagues also reported that in southwestern Uganda *omusujia* could be caused by dietary or environmental factors [39]; whereas in central Uganda, poverty, dirty water, poor hygiene and a lack of blood contributed to *omusuji* [43]; in southern Malawi, *malungo*, could be caused by hard work [42]; and in Burkina Faso humidity, rain and cold also reportedly led to *soumaya* [44].

Respondents in several countries (Kenya [49], Ethiopia [48], Nigeria [50], Senegal [51], Uganda [52,53] and Zambia [54]) viewed pregnant women as particularly vulnerable to malaria infection, yet less vulnerable than children. However, in one study from south-western Uganda, malaria was identified as universal amongst all age groups and pregnant women were not singled out [39]. Although few studies subdivided pregnant women by age, age was contemplated in one study carried out in central Uganda: the study’s findings
suggest that respondents did not recognize pregnant adolescents as a group at particular risk of malaria [55].

Several studies emphasized that pregnant women's vulnerability to malaria should be contextualized among other risks and dangers inherent to pregnancy. In southern Malawi for example, pregnancy itself was seen as a vulnerable state in which women are at greater risk of illnesses generally, particularly harm caused by witchcraft [42,56]. In central Uganda, Mbonye and colleagues emphasized the social vulnerability of adolescent pregnancy. Adolescents did not access healthcare because of the shame attached to pregnancy and commonly tried to terminate their pregnancy by any means possible [57].

Differences in perceived seriousness of MiP and the relationship between perceived seriousness and behaviour were identified in the studies. In southern Malawi, pregnant women did not view MiP as serious, or any more serious than malaria outside of pregnancy [42]. Similarly, in coastal Tanzania, MiP was not seen as a concern and problems that medically could be attributed to MiP such as anaemia, headaches and infant mortality were attributed to different causes [40]. Several studies found that fever is considered normal during pregnancy and post-partum [40,42,43,57]. In contrast, respondents from studies carried out in Uganda [39,43,57], in north-eastern Tanzania [58], in south-central Ethiopia [48], in The Gambia [59] and (a different study) in southern Malawi [45] identified MiP as serious and associated it with miscarriages, pre-term birth, swelling, dizziness, high blood pressure, abortion, dehydration, headache, vomiting, persistent menstruation, weakness and joint pain.

Four studies reported perceptions about the link between malaria and anaemia in pregnancy. MiP was not recognized as a cause of anaemia (characterized locally as a lack of blood) amongst adolescents on Ghana’s coastal savannah, which was rather seen as due to dietary factors and anxieties (particularly for unmarried girls) [60]. Central Ugandan respondents attributed anaemia (also “lack of blood”) in pregnancy to diet [43]. In The Gambia [59] and in a later study in the same region of Ghana [46] anaemia was however described as a consequence of MiP. The authors of the more recent study in the same region of Ghana suggest that this change in understanding of MiP and anaemia over time may be due campaigns of health education [46].

Attitudes towards malaria prevention and treatment

Even when MiP is perceived as a serious risk or illness, attitudes towards particular interventions or ideas about malaria prevention in general may influence the uptake of preventive measures. For example, in Burkina Faso, pregnant women were reportedly unaware of how to prevent malaria (and
anaemia) [61], and in southern Ghana, although MiP was recognized as having important health consequences, malaria prevention was not seen as possible and this impacted upon the use of preventive measures [46]; whereas in southwestern Uganda, dietary measures were seen as the main means of preventing malaria [39]. Many women in Sudan did not comply with chloroquine chemoprophylaxis, as recommended in the 1990s, due to a lack of knowledge about its benefits and fears about the safety of taking chloroquine in pregnancy [62].

Low bednet usage was attributed to a range of factors: seasonality of use and complaints about nets being uncomfortable or not of a suitable size [57,63]; perceptions surrounding ITNs’ “chemicals”, which were viewed by some respondents as harmful to pregnant women and unborn children [57]; concerns related to the retreating of ITNs and the effects of the insecticides upon pregnant women and the unborn child [50,51,52,54]; and affordability and availability [49,57]. Also, in Kenya, respondents expressed concerns about the targeting of interventions, particularly the distribution of ITNs to specific population groups, mainly children and pregnant women; their anxieties were framed in terms of comments about attacks on Kenyan’s fertility [49]. There was however evidence of demand for ITNs. In coastal and highland areas of Tanzania, Mubuyazi and colleagues reported that the national ITN voucher scheme for pregnant women had encouraged women to attend ANC at a clinic and collect their voucher [64]. Obtaining an ITN was also a motive for women in central Ghana to attend a health facility for ANC [65].

Respondents were often unsure about drugs used for IPTp and whether the drugs prevented MiP. In spite of this uncertainty, in two studies the trust placed in those administering IPTp provoked adherence. In The Gambia, respondents were unclear about the drugs used for IPTp, but they accepted the drugs as safe because health workers administered them [59]. Women in Uganda were also willing to take IPTp because they trusted TBAs and drug vendors who recommended IPTp [66]. SP was perceived to be a good cure by respondents in central Uganda however they showed little awareness of SP being used to prevent MiP [55]. Similarly, in southern Malawi, SP was associated with treating rather than preventing MiP and respondents reported that if a woman was issued SP at the ANC clinic, it was because she was sick [56].

In contrast, respondents from several studies viewed SP as harmful, suggesting that its “strength” caused miscarriages [42,55,58,67,68] and describing side effects that included mouth sores, fatigue, fever, rashes and itchiness [67,68]. In north-eastern Tanzania, Mubyazi and colleagues reported similar concerns deterring women from taking SP as IPTp [58] and Mushi and colleagues described how women linked taking SP with large babies and therefore difficult
deliveries, which they were keen to avoid [68]. However, these studies suggested that although these perceptions exist, there were very few cases of adverse effects, and that these ideas were based on hearsay rather than personal experience [58,68].

One recent study that explored a potential alternative to IPTp, intermittent screening and treatment (IST), found that pregnant women did not distinguish between the two strategies and did not complain about the blood test required for IST [65]; the differences between the two strategies were diluted by the other ANC procedures.

The reviewed studies revealed diverse attitudes towards malaria medication and a range of sources of treatment for malaria treatment during pregnancy. In Ghana, self-medication was seemingly infrequent, as pregnant women would not take medicines unless advised by an “expert” – a traditional healer or a health worker [46]. Previous research in Ghana suggested that pregnant women were keen to care for their pregnancy and therefore sought formal treatment for malaria; this differed markedly from the behaviour of other adults who mainly self-medicated with herbal remedies and other medicines at home [47]. However, women were uncertain about taking any medication in early pregnancy [47]. In contrast, Kenyan pregnant women often bought drugs over the counter and self-treated: they preferred western pharmaceuticals and were familiar with their names [69]. Women from the same study identified MiP as an important health problem, yet they often refused to be admitted to hospital for treatment for severe malaria because they could not leave their children unsupervised [69]. In north-eastern Tanzania and western Uganda, to treat malaria, women accessed formal health services, self-medicated and sought the assistance of traditional healers or TBAs [58,67].

As with IPTp, the perceived strength and side effects of treatments influence women’s readiness to take them during pregnancy. In Uganda, Cholorquine’s bitterness and the associated side effects (itching) discouraged women from taking it [67]. Mbonye and colleagues also reported concerns in Uganda about taking quinine during pregnancy [55]. Respondents in Malawi identified bitter medicines (including SP) as a cause of miscarriage and stillbirth, yet, in spite of this, they bought drugs (including SP) from drug sellers [45]. Waisa and colleagues also reported that diseases during pregnancy tend to be treated at first with herbs in the home prior to seeking assistance at the clinic [70].

Perceptions of ANC services

Many factors were identified as influencing whether women receive ANC in a health facility. Several studies identified obtaining the maternity (or health or
ANC) card as a factor that motivated women to attend a health facility for ANC [55,56,57,65,67,70,71]. The cards were desirable because they enabled women to deliver at health facilities without recrimination from health workers. Acquiring an ITN also motivated some women in coastal and highland areas of Tanzania and central Ghana to access ANC [64,65]. Being tested for sickness, checking the progress of the pregnancy and having one’s stomach examined at the ANC clinic were described as other important motivating factors [57,64,65]. In Uganda, pregnant women did not view ANC clinics as offering disease prevention, but attended ANC services when ill [55,70].

Although gestational age at first ANC visit has consequences for the provision of MiP interventions, only one of the reviewed studies surveyed factors that influence timing of first ANC visit. In southern Malawi, women preferred not to start attending ANC early in their pregnancy (before about 24 weeks); they delayed because revealing an early-stage pregnancy put them at risk from witchcraft and animosity from the community, and, in a setting where miscarriages were common, they wanted to be certain about the pregnancy before making the long journey to the clinic [56].

Once at the ANC clinic, how care is provided can also affect women’s understanding of ANC services and of MiP interventions. In Malawi, in a multi-lingual setting, health education was mainly delivered in the nurses’ mother tongue rather than that of pregnant women [56]. In Uganda, Mbonye and colleagues reported that health workers provided misleading information to women accessing ANC: they advised pregnant women to drink plenty of sweet fluids when taking SP as IPTp, “to help them withstand the strength of Fansidar” (the brand name for SP) [55]. As a consequence, women were deterred from visiting the clinic because they could not afford to buy these liquids [55]. Women in Malawi also reported that being rebuked by health workers discouraged them from attending ANC [45].

Structural factors affecting the delivery and uptake of MiP interventions

Overall, fifteen studies identified structural factors that can affect the delivery and uptake of MiP interventions, particularly those delivered through ANC services. Factors purely affecting demand for ANC services included distance to the clinic and cost of services [43,55,57,58,61,66,67]. Once at the ANC clinic, supply and demand were influenced by a range of factors: pregnant women and health workers complained about the lack of resources, including staff, laboratory tests, drugs, and clean cups and water to administer IPTp with SP [56,58,67]. Whilst Mubyazi and colleagues reported that in coastal and highland areas of Tanzania women were generally satisfied with ANC services, they also described the complex nature of ANC services and fees, which discourage some
women: participants complained about varied user fees, penalties and punishments for late attendance, and unnecessary referrals, which also had to be paid for [64].

Tanzanian policy makers reported a range of factors that influence the delivery and uptake of IPTp. In addition to late ANC attendance, they reported concerns about compliance with the IPTp delivery guidelines at healthcare facilities, problems of monitoring delivery, a lack of SP, questions about the effectiveness of the direct observation treatment (DOT) procedure, and poor communication with the media, which led to misleading newspaper articles about the appropriateness of SP for IPTp [41]. One study in Uganda highlighted the difficulty of providing malaria and HIV prevention in an integrated manner due to insufficient drug stocks and health workers lacking adequate skills [72].

Various strategies have been employed to improve the delivery of MiP interventions: in central Uganda delivering IPTp in the community rather than at the ANC clinic improved uptake and increased awareness of the dangers of MiP [66]; and, in eastern Sudan, bednet distribution through local committees and leaders authorities encouraged their use more than distribution through the ministry of health [63]. In Tanzania, a social marketing approach, using vouchers that pregnant women received as part of ANC and then exchanged for a subsidized bed net, has been trialled. However, despite initial high voucher return rates, there have been mixed reports of awareness about the scheme, how to take part, and the intended recipients of the nets [73]. Even at a discounted price, some women were not able to afford the nets and nets also “leaked” from the system [74]. There was also disagreement amongst policy makers in Tanzania regarding the effectiveness of the subsidized system [41]. In Sudan, when exempted from costs, pregnant women visited the clinic more often and were able to buy a full course of medication [75]. The cost of malaria medication was also the priority for respondents from one study in Uganda [53].

Finally, household decision-making dynamics can also have an impact on how women access ANC and therefore MiP interventions. For example, in Uganda and Kenya, husbands were reportedly in control of domestic resources and acted as ultimate decision makers. They therefore influenced whether their wives sought ANC at a health facility or not and whether they purchased an ITN [49,57]

Discussion

The reviewed studies illustrate that the symptoms (particularly fever) or symptom complexes often brought about by malaria infection are associated with various locally defined illnesses [39,40,42,43,44]. Furthermore, although many respondents linked mosquitoes bites with malaria (or the corresponding
local disease category), other factors were also viewed as important, such as exposure to heat, cold or rain, diet and hard work [39,42,43,44,47,48]. Given that women experience malaria-like symptoms during pregnancy [42], particularly fever, understanding how these symptoms are interpreted in local disease categories (and what action is taken) is of particular public health interest and is essential for the appropriate design of strategies of health education focused on MiP.

How women understand their vulnerability to malaria and other illnesses when pregnant is key to designing and promoting appropriate MiP interventions. Study respondents often viewed pregnant women as particularly vulnerable to malaria infection and identified serious potential health impacts of MiP [48,49,50,51,52,54]. However, the vulnerability of pregnant women was often described in more general terms [42,56]. Moreover, although adolescents are at greater risk of MiP and its adverse effects [3], the social vulnerability of pregnant adolescents is also important; pregnant adolescents suffer stigma, which has implications for pregnancy care and requires further study in African contexts [57].

Although clinicians, policy makers and scientists may focus on reducing the burden of MiP, the reviewed research suggests that pregnancy care is often less illness specific; women act, within certain socio-economic, social, cultural and individual constraints, so as to protect themselves and their pregnancies from what they see as the most important threats. Some of these threats, such as those described by Tolhurst [45], are not perceived in biomedical disease categories, and some are given personalistic explanations related to witchcraft [76,77]. The promotion of pregnancy care that is based on a more holistic understanding of illness, and less disease-focused, is more likely, compared with a disease-focused approach, to resonate with women's own ideas of protecting their pregnancy.

Antenatal care at health facilities is a key platform for the delivery of MiP interventions. Therefore factors that influence the timing of ANC visits impact MiP interventions. A prior literature review has shown that a woman's (and her husband's) education, cost (travel and upfront fees) and distance to the clinic are key determinates of ANC attendance [78]. A woman's age is also important, albeit in a complex manner; although young women in some contexts hide their pregnancy and delay formal ANC, older women may also delay or avoid ANC because they are accustomed to pregnancy [78,79]. Ideas about the purpose of ANC services influenced ANC attendance [55,70,80]: women viewed ANC as providing treatment rather than prevention, and only attended when ill. Health workers' attitudes and behaviour towards pregnant clients and attitudes towards specific services offered can also potentially deter women from accessing ANC at health facilities [55]. For example, fears about HIV-testing (or
status disclosure) has been reported as influencing ANC attendance in rural Zimbabwe [79]. The factors influencing ANC attendance are not only complex, but also often context-specific, requiring locally appropriate strategies to improve attendance [76]. Chapman, for example, demonstrates the value of long-term qualitative research for providing an in-depth understanding of pregnancy care [76]. However, there is a general lack of qualitative studies, which could inform locally appropriate strategies [78].

A range of factors influences how recommended policies for MiP prevention and care are implemented and received locally. In addition to issues of cost and accessibility, deterrents to ITNs use and IPTp uptake included dissatisfaction with and anxieties about ITNs or the insecticide re-treatment [50,51,52,54,55,57] and concerns about the side effects of taking SP during pregnancy [45,55,58,68]. Concerns about SP and other malaria drugs were linked to local discourses [58,68] and reinforced [55] or dispelled [46,59] by health staff. Exploring the social relationship between pregnant women and healthcare staff in the context of formal ANC, and the influence of local discourses is therefore key to understanding attitudes towards and uptake of malaria interventions.

Structural factors affect the uptake of MiP interventions at a range of levels: from household decision-making to national and international implementation strategies. The reality of ANC in health facilities complicated the implementation of national IPTp guidelines in Tanzania [41] and the delivery of integrated HIV and malaria prevention in Uganda [72]. And although other strategies for IPTp and ITN delivery demonstrated some success, there remain structural challenges linked to delivery (e.g. shortages at healthcare facilities and a lack of health worker training) and uptake (e.g. cost and distance) to overcome [41,63,66,74]. Access to MiP interventions (and formal ANC) is also influenced by the dynamics of in-household decision-making, and gender relations [57]. The qualitative research methods available to social scientists are well suited to the study of structural factors across multiple levels enabling observed phenomena to be situated within their household, community, cultural, social, economic and historical context.

**Priorities for further research**

To explore thoroughly the socio-cultural factors that affect the uptake of MiP interventions, malaria must be contextualized within local understandings of illness, (social and economic) vulnerability and care during pregnancy. However, many of the reviewed studies were disease-focused and the authors were unable to take such a broad approach. Furthermore, many of the articles were of a largely descriptive nature: perceptions about MiP and attitudes towards ANC
services are detailed, however, attempts at identifying the social and cultural factors that underlay these perceptions and attitudes were limited. This illustrates the need for further study of the themes highlighted in this review. Moreover, through employing a comparative, in-depth research approach it will be possible to move beyond describing perceptions, to investigate if, how and why such perceptions affect behaviour, and how these perceptions are formed and changed. Such in-depth understanding would provide a useful basis for the development of public health policy to reduce the burden of MiP.

The review has also identified specific topics that have been neglected in the qualitative research on MiP and that should be afforded particular consideration in further study. Adolescent pregnancy receives little attention in the literature, in spite of the vulnerability of this population group to MiP and the stigma that accompanies adolescent pregnancy in many societies and has implications for pregnancy care. Anaemia during pregnancy, its corresponding local disease categories and ideas about causation are also neglected topics, the study of which would contribute to understandings of MiP. The factors influencing gestational age at first formal ANC visit are also largely neglected in the reviewed literature, in spite of the impact that ANC attendance has on MiP interventions and on maternal health in general. Structural factors influencing the delivery and uptake of MiP intervention are also under-explored: the relationships and interactions between structural factors at a range of levels and how these influence behaviour are of particular interest.

Further research is also required in order to keep pace with the changing strategies of MiP prevention and control. For example, in terms of structural factors at the household level, research on decision-making regarding which family member(s) use ITNs is important, particularly in light of changing patterns of ITN distribution. Given the increased reliance on ACTs with varying treatment regimens, social scientists must also continue to explore related attitudes and understanding of new antimalarials. Moreover, as demonstrated by changes over time in understandings of the relationship between MiP and anaemia in Ghana [46,60], knowledge, perceptions and beliefs rarely remain static. Social science research is therefore necessary to track such changes and explore the underlying social and cultural factors.

**Strengths and limitations of the review**

This review provides a synthesis of a greater number of qualitative studies than the previous, albeit non-systematic, review focusing on social science research on MiP in Africa [17]. Searching the MiP Consortium Library ensured access to additional literature that would have been otherwise omitted from a search including only the conventional databases (OVID SP etc). The exclusion of non-
English language research represents a limitation, however, as only five articles were excluded for this reason, the impact upon the themes identified in the review is likely to be minimal. The abstracts of the studies with unavailable full text were also assessed (see Appendix 2): several of the article were published over 15 years ago and therefore referred to outdated MiP interventions, others presented findings based on quantitative methods and those with relevant findings presented in the abstracts, largely confirmed the reviews findings (e.g. women lacking familiarity with IPTp [81] and adolescents not perceiving a greater risk of malaria during pregnancy [82]). It is unlikely therefore that the contents of these articles would have substantially altered the review’s findings. Included studies were assessed as, on average, of a fair quality. This suggests that, in general, the findings are based on an overall sound body of research. However, the scope of the review’s findings is restricted by the topics dealt with by the included articles.

Conclusions

Qualitative methods have become increasingly prominent in research on the uptake and delivery of MiP interventions. Despite the increasing number of qualitative studies, to date, reviews of social science research on malaria prevention and control have identified a lack of translation of findings, particularly from qualitative research, into policy [18,19,29]. In light of this, the findings from this review represent a potentially useful resource for policy makers as well as researchers in the field of MiP.

The reviewed qualitative research has revealed a range of factors as relevant to the uptake of MiP interventions, which are important considerations for the design and implementation of strategies to reduce MiP-related morbidity and mortality. The following factors are of particular importance: malaria and MiP is often understood in terms of locally-defined illness categories that may incorporate other causal explanations in addition to mosquito bites; although pregnant women are viewed as particularly at risk of malaria infection, and MiP as having important health impacts, the vulnerability of pregnant women is sometimes considered in less-disease specific terms; ideas about the purpose of ANC services and health workers’ attitudes and behaviour towards pregnant clients influence attendance at health facilities for ANC; concerns about specific MiP interventions are influenced by local discourses and the attitudes and behaviours of health staff; patterns of household decision-making and gender relations influence women’s access to MiP interventions; shortages of health personnel and resources, and inadequate infrastructure and health worker training impact upon the provision of MiP interventions; and cost of services and distance to health facilities influence women’s access to MiP interventions.
In spite of the recent increase in qualitative research on MiP and MiP interventions, the review has highlighted a range of topics that require further research and demonstrated the need to follow a comparative yet in-depth research strategy. Key areas requiring further research include: local disease categories and symptoms of MiP and anaemia during pregnancy; understandings of pregnant women’s and adolescents’ perceived vulnerability to malaria and its consequences; perceptions about MiP interventions; wider political discourses around interventions; and factors that influence ANC attendance, including timing of first visit. In response to this, as part of the MiP Consortium’s Public Health Impact research theme, a programme of anthropological research employing qualitative methods has been developed and is currently being carried out. Research is being undertaken in four settings across sub-Saharan Africa (Ghana, Kenya and Malawi), to investigate comparatively the social and cultural context to MiP and the uptake of MiP interventions.

References


<table>
<thead>
<tr>
<th>Region</th>
<th>Country</th>
<th>Year</th>
<th>Reference</th>
<th>Disease categories corresponding to malaria or MiP</th>
<th>Explaining malaria or MiP</th>
<th>Vulnerability of pregnant women (including adolescents)</th>
<th>Seriousness of MiP</th>
<th>Anaemia</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>2005</td>
<td>[58]</td>
<td>Several terms used including &quot;homa&quot; (fever).</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Uganda</td>
<td>1994</td>
<td>[39]</td>
<td><em>Omusujia</em>, any kind of fever or feelings of illness.</td>
<td>Mosquito bits, dietary and environmental factors.</td>
<td>No more vulnerable to malaria than other groups.</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>2006</td>
<td>[57]</td>
<td></td>
<td></td>
<td>At high risk of malaria. Adolescents not especially vulnerable to MiP but occupy.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Year</td>
<td>Region</td>
<td>Reference</td>
<td>Description</td>
<td></td>
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</tr>
<tr>
<td>2006</td>
<td>Malawi</td>
<td>[43]</td>
<td>Precarious social position. Mosquito bites, poverty, dirty water, poor hygiene and &quot;lack of blood&quot;. Pregnant women (and children) most vulnerable to malaria. Adolescent not at special risk of MiP. Main cause of ill health for pregnant women. Can result in miscarriage. Attributed to diet.</td>
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<td></td>
<td></td>
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</tr>
<tr>
<td>2007</td>
<td></td>
<td>[66]</td>
<td>Adolescents not especially vulnerable to malaria.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2008</td>
<td></td>
<td>[53]</td>
<td>Pregnant women (and children) most vulnerable to malaria.</td>
<td></td>
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</tr>
</tbody>
</table>

### Malungo, implied a common and fairly harmless illness.

<table>
<thead>
<tr>
<th>Year</th>
<th>Region</th>
<th>Reference</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>Malawi</td>
<td>[42]</td>
<td>Vulnerable to witchcraft.</td>
</tr>
<tr>
<td>2007</td>
<td></td>
<td>[56]</td>
<td>Vulnerable to witchcraft.</td>
</tr>
</tbody>
</table>

### Southern Africa Malawi
- 2006 [42]: *Malungo*, implied a common and fairly harmless illness.
- 2007 [56]: Vulnerable to witchcraft.
- 2008 [45]: One of "modern" diseases.

### Zambia
- 2001 [54]: More vulnerable to malaria.

### West Africa Burkina Faso
- 2002 [44]: No one-to-one equivalent – *soumaya* used instead.
- 2004 [54]: Women unsure how to prevent anaemia (and malaria).

### Ghana
- 1994 [47]: *Fever* (and *asra*) in Mosquito bites, heat
Due to dietary factors.

Consequence of MiP.

<table>
<thead>
<tr>
<th>Region</th>
<th>Country</th>
<th>Year</th>
<th>Reference</th>
<th>ITNs</th>
<th>IPTp/SP/Chemopraxis/IST</th>
<th>Case management</th>
</tr>
</thead>
<tbody>
<tr>
<td>East Africa</td>
<td>Ethiopia</td>
<td>1996</td>
<td>[62]</td>
<td>Chemopraxis non-compliance due to lack of knowledge; safety fears; lack of time; distance to clinic.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kenya</td>
<td>2004</td>
<td>[48]</td>
<td>Lack of confidence in ITNs.</td>
<td>SP perceived to be less effective.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kenya</td>
<td>2005</td>
<td>[69]</td>
<td>Women were aware of dangers of not taking IPTp.</td>
<td>Women preferred “Western” drugs, refused admission for severe malaria to avoid leaving children unsupervised, bought drugs over-the-counter and self-medicated.</td>
<td></td>
<td></td>
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<tr>
<td>Year</td>
<td>Country</td>
<td>Event</td>
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<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>2003</td>
<td>Tanzania</td>
<td>Pregnancy women were aware of ITNs but awareness of how to take part in voucher scheme low.</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>2005</td>
<td>Tanzania</td>
<td>Demand for ITNs but lack of knowledge about insecticide treatment and concerns about net sizes. Used only after rainy season.</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>2006</td>
<td>Tanzania</td>
<td>Feared side effects (including miscarriages) women so did not swallow IPTp tablets. Problems of delivery: lack of water and cups. Not all staff understood IPTp.</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>2008</td>
<td>Tanzania</td>
<td>Pregnancy women were aware of ITNs but lack of knowledge about insecticide treatment and concerns about net sizes. Used only after rainy season.</td>
<td></td>
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<tr>
<td>2008</td>
<td>Tanzania</td>
<td>To treat malaria women used formal healthcare services, self-medicated and sought the help of traditional healers.</td>
<td></td>
<td></td>
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<tr>
<td>2008</td>
<td>Uganda</td>
<td>Concerns about distance to retailers.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>2009</td>
<td>Uganda</td>
<td>Cholorquine perceived as causing itching that deterred use. Bitter drugs should not be taken during pregnancy. Formal health system last resort for treating malaria.</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>2010</td>
<td>Uganda</td>
<td>National ITN voucher scheme encouraged ANC attendance.</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>2010</td>
<td>Uganda</td>
<td>ITNs viewed as a positive aspect of formal ANC.</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>2006</td>
<td>Uganda</td>
<td>To treat malaria women used formal healthcare services, self-medicated and sought the help of traditional healers.</td>
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<tr>
<td>2008</td>
<td>Uganda</td>
<td>Concerns of effects of insecticide treatment for ITNs on foetus and mother.</td>
<td></td>
<td></td>
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<tr>
<td>2008</td>
<td>Uganda</td>
<td>SP viewed as a cure (not prevention) and strong enough to cause abortions or foetal abnormalities.</td>
<td></td>
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<tr>
<td>Year</td>
<td>Location</td>
<td>Notes</td>
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<tr>
<td>2006</td>
<td>[57] Malawi</td>
<td>Health workers promoted idea of strength and encouraged women to drink sweet liquids they could not afford. IPTp viewed as promoting resistance to SP.</td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>2006</td>
<td>[43] South Africa</td>
<td>ITNs not used because of their price and perceived dangers – influencing pregnancy outcomes. Women reluctant to buy ITN because this required money and if they spent money their husband would accuse them of having an affair.</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>2007</td>
<td>[66] South Africa</td>
<td>New delivery approach led to increased use of ITNs.</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>2008</td>
<td>[53] Malawi</td>
<td>Women accepted IPTp due previous experience of MiP and because they trusted drug vendors and TBAs providing SP.</td>
<td></td>
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<td></td>
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<tr>
<td>2008</td>
<td>[70] South Africa</td>
<td>Women frustrated at “only” receiving SP at ANC</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>2010</td>
<td>[72] South Africa</td>
<td>IPTp delivered but due to range of problems not done so in an integrated manner with HIV/AIDS prevention.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Southern Africa</td>
<td>2007 [56] Malawi</td>
<td>Unclear messages re timing of IPTp. SP shortages. ANC staff had little knowledge of SP. Women took SP as trusted health staff. Women viewed SP as treatment not prevention.</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Zambia</td>
<td>2001 [54]</td>
<td>ITNs identified as harmful to pregnant women.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zambia</td>
<td>2001 [54]</td>
<td>To treat malaria women buy over-the-counter drugs and self-medicate.</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Zambia</td>
<td>2001 [54]</td>
<td>Bitter medicine, including SP thought to cause miscarriages and still births. But taken if prescribed.</td>
<td></td>
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</tr>
<tr>
<td>Zambia</td>
<td>2001 [54]</td>
<td>Women buy medication, including SP, from vendors, in spite of advice to go to ANC clinic.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Country</td>
<td>Year</td>
<td>Reference</td>
<td>Action/Concern</td>
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<td>-------------------------------------------------------------------------------</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>West Africa</td>
<td>2002</td>
<td>[44]</td>
<td>ITNs used. Cholorquine reported as a way of preventing malaria.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ghana</td>
<td>1994</td>
<td>[47]</td>
<td>Pregnant women seek treatment for malaria at the clinic more readily than other groups. Medication in early pregnancy not advised. Women always sought advice from experts (health workers or traditional healers) before taking medication.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2007</td>
<td>[46]</td>
<td>ITNs not used as there was scepticism about possibility of preventing malaria.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nigeria</td>
<td>2001</td>
<td>[50]</td>
<td>Concerns about insecticide treatment for ITNs, with fumes possibly causing miscarriage. Blood tests were accepted provided purpose was given.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Senegal</td>
<td>2001</td>
<td>[51]</td>
<td>Concerns about insecticide treatment for ITNs, linking smell to damage to the foetus.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The Gambia</td>
<td>2009</td>
<td>[59]</td>
<td>Confusion about IPTp and iron treatment and ignorance of the IPTp schedule. Women unclear about the drugs given in ANC but accepted them as safe if given by health workers. Cholorquine avoided in pregnancy due to bitter taste.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Region</td>
<td>Country</td>
<td>Year</td>
<td>Reference</td>
<td>Perceptions of ANC services</td>
<td>Structural factors affecting access to and delivery of ANC services</td>
<td></td>
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</tr>
<tr>
<td>East Africa</td>
<td>Tanzania</td>
<td>2005</td>
<td>[58]</td>
<td>Complaints about lack of laboratory services, services, shortages of staff and the behaviour of staff contributed to negative opinions of ANC services at the clinics.</td>
<td>Lack of resources at clinic.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2009</td>
<td>[71]</td>
<td>Obtaining the “maternity” card, having the position of the baby checked motivated women to attend a health facility for ANC. They had also heard of the “malaria injection”, SP tablets, ITN vouchers and the blood test for tetanus. General positive view of ANC services.</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>2010</td>
<td>[64]</td>
<td>Complaints about varied user fees, penalties and punishments for late attendance, and unnecessary referrals, which also incurred costs. Time required to travel the distance to the clinic and waiting for services also influenced access.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Uganda</td>
<td></td>
<td>1998</td>
<td>[67]</td>
<td>Obtaining the “maternity” card and checking the position of the baby motivated women to attend a health facility for ANC. Complaints about costs, lack of staff, poor examinations.</td>
<td>Cost described as an issue.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2006</td>
<td>[55]</td>
<td>Obtaining the “maternity” card motivated women to attend a health facility for ANC. Women did not view ANC clinic as offering disease prevention, but attended ANC services when ill and complained about lack of drugs. Health workers advised pregnant women to drink sweet fluids when taking SP as IPTp deterring women from the clinic, as they could not afford these liquids. Complaints about rudeness of staff.</td>
<td>Distance to the clinic and cost of services influenced demand for ANC services. Husband control financial resources so women dependent on husbands to access ANC services.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2006</td>
<td>[57]</td>
<td>Obtaining the “maternity” card motivated women to attend a health facility for ANC. Fear of rebukes from health staff regarding dress, lateness, use of herbal treatments.</td>
<td>Distance to the clinic and cost of services influenced demand for ANC services.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2006</td>
<td>[43]</td>
<td>Obtaining the “maternity” card motivated women to attend a health facility for ANC. As did receiving tetanus immunization, testing for anaemia and being tested for other diseases.</td>
<td>Distance to the clinic and cost of services influenced demand for ANC services.</td>
<td></td>
</tr>
</tbody>
</table>
Health workers reported that women lack knowledge about dangers of MiP and for this reason do not attend ANC.

Obtaining the “maternity” card motivated women to attend a health facility for ANC. ANC literally referred to as “drinking medicine” and associated with being ill. Women attend ANC when ill and expect to receive medication.

Obtaining the “maternity” card and ensuring the baby was growing well motivated women to attend a health facility for ANC. Women delayed formal ANC because revealing an early-stage pregnancy put them at risk from witchcraft and animosity from the community, and in a setting where miscarriages were common, they wanted to be certain about the pregnancy before making the journey to the clinic.

Rebukes from health workers discouraged women from attending ANC.

Satisfied with ANC service quality. A small proportion knew services were free. ANC therefore seen as costly.

Obtaining the “maternity” card and an ITN motivated women to attend a health facility for ANC. Women unclear about specific diseases being treated or prevented during ANC visits. Checking the position of the pregnancy was another motivating factor. Health workers treated the pregnant women well and women trusted health workers.

Distance to the clinic, cost of services, and stock outs influenced demand for ANC services.

Financial constraints limit access to ANC services.

Transport costs influence access to ANC services.
Appendix 1. OVID SP and ISI Web of Knowledge databases

<table>
<thead>
<tr>
<th>OVID SP</th>
<th>ISI Web of Knowledge</th>
</tr>
</thead>
<tbody>
<tr>
<td>British Nursing Index and Archive (1985 – May 2010)</td>
<td>BIOSIS Previews® (1926 – May 2010)</td>
</tr>
<tr>
<td></td>
<td>Zoological Record® (1864 – May 2010)</td>
</tr>
<tr>
<td></td>
<td>Web of Science® (1899 – May 2010)†</td>
</tr>
<tr>
<td></td>
<td>Derwent Innovations IndexSM (1980 – May 2010)</td>
</tr>
</tbody>
</table>

† Web of Science includes the following databases: Science Citation Index Expanded (SCI-EXPANDED) (1899 – May 2010); Arts & Humanities Citation Index (A&HCI) (1975 – May 2010); Conference Proceedings Citation Index- Science (CPCI-S) (1990 – May 2010); Conference Proceedings Citation Index- Social Science & Humanities (CPCI-SSH) (1990 – May 2010)

Appendix 2. Articles with full text unavailable

<table>
<thead>
<tr>
<th>Reference</th>
<th>Location</th>
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<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>[2]</td>
<td>Nigeria</td>
<td>Medical journal article</td>
<td>Abstract accessed: likely to be excluded based on the quantitative data collection</td>
</tr>
<tr>
<td>[3]</td>
<td>Malawi</td>
<td>Journal article</td>
<td>Abstract accessed: potentially interesting article that discusses the importance of qualitative data. However it is dated and discusses outdated interventions (chemoprophylaxis).</td>
</tr>
<tr>
<td>[5]</td>
<td>Uganda</td>
<td>Medical journal article</td>
<td>Abstract accessed: adolescent girls did not consider themselves at risk of malaria when pregnant. Anaemia and low birth weight were not related to MiP. Malaria self-medication (with the counter drugs, herbs or both) was common.</td>
</tr>
<tr>
<td>[6]</td>
<td>Tanzania</td>
<td>Journal article</td>
<td>Abstract accessed: MiP identified by community members as an important health issue</td>
</tr>
<tr>
<td>[8]</td>
<td>Nigeria</td>
<td>Tropical Medicine journal article</td>
<td>Abstract accessed: unclear and possibly relevant to MiP prevention and treatment for adolescents. However, the article is dated and potentially investigates outdated interventions.</td>
</tr>
<tr>
<td>[9]</td>
<td>Nigeria</td>
<td>Unknown</td>
<td>Based on title: likely to be excluded on other grounds (not focussed on MiP) but unclear</td>
</tr>
</tbody>
</table>
References
### Appendix 3: Data extraction tables

<table>
<thead>
<tr>
<th>Article</th>
<th>Aim</th>
<th>Methods</th>
<th>Participants</th>
<th>Country</th>
<th>Key findings from qualitative data</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abdu, Z., et al., (2004). “The impact of user fee exemption on service utilization and treatment seeking behaviour: the case of malaria in Sudan.” Int J Health Planning and Management 19:S95-S106</td>
<td>To assess the impact of different levels of user fee exemption on service utilization and treatment seeking behaviour for children under five years and pregnant women.</td>
<td>Experimental study design including FGDs; IDIs (household surveys).</td>
<td>Mothers of children under five years (N=128 and 160); pregnant women (N=44 and 40); health workers.</td>
<td>Sudan</td>
<td>The qualitative data confirmed that under the fee exemption scheme pregnant women visited the clinic more often when they had malaria and were able to buy a full course of medication.</td>
<td>29</td>
</tr>
<tr>
<td>Adhanom Ghebreyesus T., et al. (1996). “Community participation in malaria control in Tigray region in Ethiopia.” Acta Tropica 61:145-156</td>
<td>To describe the activities of the community based malaria control programme.</td>
<td>(Training and monitoring of CHW activities); FGDs.</td>
<td>Community members; CHWs.</td>
<td>Ethiopia</td>
<td>Pregnant women did not comply with weekly malaria chemoprophylaxis due to: a lack of knowledge about the reasons for and the safety of chemoprophylaxis; the belief that chemoprophylaxis during pregnancy causes abortion; lack of time to meet healthcare needs; and, the distance to the clinic.</td>
<td>NA</td>
</tr>
<tr>
<td>Agyepong, I. A. &amp; Manderson, L. (1994). “The diagnosis and management of fever at household level in the Greater Accra Region, Ghana.” Acta Tropica 58:317-330</td>
<td>To describe the folk diagnosis, etiology and management of malaria.</td>
<td>FGDs; IDIs; observations (cross-sectional survey).</td>
<td>Community members.</td>
<td>Ghana</td>
<td>Fever was the term predominately used for malaria. Mosquitoes were seen as playing role in malaria transmission via “drinking” dirty water. Adults treat their fever first at home with herbal remedies and other drugs, but pregnant women with fever wait a few days to see if it improves and if not go straight to the hospital because want to care for their pregnancy. Medicine in early pregnancy however “might spoil your pregnancy”.</td>
<td>29</td>
</tr>
<tr>
<td>Agyepong, I. A., et al. (1997). “A comparative study of clinical and sociocultural aspects of anaemia among adolescent girls in rural Ghana.” Acta Tropica 65(3): 123-138.</td>
<td>To investigate the prevalence of malaria and anaemia among adolescent girls, and community perceptions of blood, anaemia and malaria.</td>
<td>Participant observation; FGDs; IDIs; informal discussions; (structured interviews, blood examinations).</td>
<td>Adolescent girls (pregnant and non-pregnant); adult men; adult women; community leaders; local healers; parents/guardians of adolescent girls.</td>
<td>Ghana</td>
<td>MiP was not specifically associated with anaemia (locally conceptualised as bad blood/no blood in the body) though dizziness, weakness, weight loss and pallor were seen as symptoms. Possible underlying causes of anaemia in pregnancy were poor diet (including drugs) and anxieties such as being unmarried.</td>
<td>28</td>
</tr>
</tbody>
</table>

“[T]o elicit relevant contemporary ethnographic feature of malaria in children and pregnant women in two rural villages in Ghana for intervention.”

Free listing and rating; Participatory social mapping; IDIs; FGDs.

Community members; chiefs and elders (8 IDIs); women’s leaders (4 IDIs); pregnant women (8 IDIs); caretakers of children < five years (8 IDIs).

Ghana

Malaria was considered the most common health problem in the two communities. Malaria was grouped into a common fever or male fever – the former easily cured with herbs or medicines; the latter more difficult to cure. Pregnant women were not allowed to take medicines (neither herbal nor biomedical) without the advice of “experts” – at the clinic/hospital or local healers. Treatment at the clinics/hospitals was preferred but costs were described as prohibitive and higher than those of local healers. Malaria also caused reduction in blood. Respondents were unconvinced by the possibility or preventing malaria. Mosquito bites were amongst various causes of malaria. ITNs were not used.


“To assess whether rural Gambian women were aware of the importance of the timing of the two-dose IPT dose schedule and its relevance for drug safety”.

IDIs; FGDs.

Married women (8 FGDs); adolescent girls (3 FGDs); TBAs (1 FGD); men (4 FGDs) (41 IDIs).

The Gambia

The Gambia

Quickening not recognised as a specific stage in pregnancy. MiP known to cause anaemia and pre-term birth and to affect the foetus indirectly. Chloroquine identified as a drug to be avoided in early pregnancy due to bitter taste. TBAs encouraged women to visit ANC in first trimester. Women unclear about drugs they were given and accepted as safe if given by a nurse or doctor. There was some confusion about IPTp and iron treatments. Overall ignorance of IPTp schedule and its importance. Importance of Muslim understandings of foetal development.


 “[T]o explore barriers to ownership and use of ITNs among the poorest populations before and after the mass campaigns, to identify strategies for improving coverage, and to make recommendations on increased coverage levels can be sustained”.

FGDs (cross-sectional survey, semi-structured interviews).

Community members.

Kenya

Affordability seen as an important barrier to ITN ownership. Non-white ITNs were preferred. Community preferences were not considered in the design of ITNs. Pregnant women and children were recognised as being most at vulnerable from malaria but respondents were suspicious about the targeting of interventions at these groups – linked to concerns about demographic assault. ITNs should be available for all. Men control the household resources and therefore health-related decision-making. Subsidised ITNs intended for vulnerable
“To investigate the local perceptions, practices and treatment seeking behaviour among women with children under the age of five years”.

FGDs; IDIs (questionnaire survey).

Mothers of children under the age of five (3 FGDs, 5 IDIs).

Ethiopia

“[T]o investigate the local perceptions, practices and treatment seeking behaviour among women with children under the age of five years.”

FGDs; IDIs

Mothers of children under the age of five (3 FGDs, 5 IDIs).

Ethiopia

“Retention and efficacy of long-lasting insecticide-treated nets distributed in Eastern Sudan: a two-step community-based study.”


To investigate the retention of ITNs and their efficacy.

(Questionnaire survey); FGDs

Men; women (8 FGDs).

Sudan

“Recognition, treatment seeking behaviour and perception of cause of malaria among rural women in Uganda.”


To understand recognition, treatment seeking behaviour and perceptions of cause of malaria among rural women.

FGDs; IDIs; (semi-structured interviews)

Woman; women attending MCH clinic. (45 FGDs, 64 IDIs).

Uganda

To discover how Yao women understand and explain MiP, how they perceive it, and what type of knowledge they have about it.

Two stage design: FGDs ; IDIs; drug identification exercises; participant observation; (KAP survey).

Women of reproductive age (n=34); traditional advisers (n=4); TBAs (n=2); traditional healer (n=1); man (n=1).

Malawi

“Recognition, treatment seeking behaviour and perception of cause of malaria among rural women in Uganda.”


To understand recognition, treatment seeking behaviour and perceptions of cause of malaria among rural women.

FGDs; IDIs; (semi-structured interviews)

Woman; women attending MCH clinic. (45 FGDs, 64 IDIs).

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To investigate the retention of ITNs and their efficacy.

(Questionnaire survey); FGDs

Men; women (8 FGDs).

Sudan

“Malaria-related perceptions and practices of women with children under the age of five years in rural Ethiopia.”

BMC Public Health 9:259

To investigate the local perceptions, practices and treatment seeking behaviour among women with children under the age of five years.

FGDs; IDIs (questionnaire survey).

Mothers of children under the age of five (3 FGDs, 5 IDIs).

Ethiopia

Respondents used the term Busaa to refer to malaria, which was considered a serious disease. Pregnant women, along with children were identified as especially vulnerable to malaria. The effects of MiP were well-articulated and prompt action recommended. Although malaria was linked to mosquito bites there were other factors associated. Reduced effectiveness of SP for treatment of malaria recognised. Lack of confidence in ITNs reported.

Most FGD participants said they would like to have more ITNs than they had. People did not know if nets were impregnated or not, or needed to be, and were seen as for use during and after rainy season only. Some thought nets were too large.

Word used for malaria (omusujia) also refers to any kind of fever and generally feeling unwell. Seen to be caused by diet, environmental factors, mosquitoes and part of other illnesses. In pregnancy symptoms are miscarriage, vomiting, general weakness, heat in the stomach, coldness, joint pain, lack of appetite – seen as serious. Complications could also lead to loss of blood, miscarriage, turning yellow, mental health problems, few go to hospital first.

No vernacular word for malaria or MiP. Malungo refers to various fevers aside from malaria. Mulungo in pregnancy, although a problem, is not seen as serious (anaemia, diarrhoea, STDs, AIDS, cholera and convulsions seen as more serious) and is common. There are two kinds of Malungo, one caused by mosquitoes, one by hard work. Concerns...
To examine pregnant women’s perceptions and knowledge about malaria medication and the use of ANC services.

Two stage design: FGDs; IDIs; participant observation; (KAP survey).

Women of reproductive age (n=34); traditional advisers (n=4); TBAs (n=2); traditional healer (n=1); man (n=1).


To assess perceptions of use of SP in pregnancy and identify policy implications.

FGDs; IDIs.

Adolescent girls (n=15); women 20-49 years (n=75); opinion leaders; local council officers; retired female teachers; drug shop owners; TBAs; pregnant and non-pregnant women.


There were unclear messages about IPTp with SP from nurses relating to timing. There were shortages of SP and nurses demonstrated limited understanding of SP. Bitter tasting drugs were thought to cause miscarriage, yet most accepted SP during pregnancy, as doctors know what is best. SP was seen as a treatment rather than prevention for malaria (nets are for prevention). Timing of first ANC visit (average 24 weeks) prompted by desire to confirm pregnancy and it was common to wait until quickening - miscarriage was common and do not want the inconvenience of travelling a long distance to the clinic before being certain of the pregnancy). Mothers attended ANC to check that the baby was growing well and for fear of not being properly attended by nurses during delivery (e.g. by obtaining an ANC card). Health education was delivered in mother tongue of the nurses rather than that of the women.

Children seen as most at risk of malaria, followed by pregnant women due to poor diet and low bed net use. Men also saw women as vulnerable due to weak blood but primagravide and adolescents were not seen as at risk of malaria. Mild and severe malaria were distinguished. Fever, accompanied by lower abdominal and breast pain seen as normal after delivery. It was seen as not possible to have malaria without symptoms. SP viewed as treatment not prevention, and as strong enough to cause abortions and foetal abnormalities as health workers encouraged drinking of sweet fluids when taking SP. IPTp was also seen to cause drug resistance and it was better to use weaker drugs first. Perception of drug strength may be rooted in...

To explore the perceptions and beliefs and practices associated with malaria prevention in pregnancy.

FGDs; IDIs.

Pregnant women; non-pregnant women; adolescent girls; men (10 FGDs); opinion leaders; local council officers; elderly midwives; retired female teachers; drug shop owners; TBAs; pregnant and non-pregnant women (40 IDIs).

Uganda


To assess perceptions of MiP, recognition of early signs or pregnancy and of malaria and cultural context of treatment seeking.

FGDs; IDIs.

Pregnant women; non-pregnant women; adolescent girls; men (10 FGDs); opinion leaders; local council officers; elderly midwives; retired female teachers; drug shop owners; TBAs; pregnant and non-pregnant women (40 IDIs).

Uganda

Mbonye, A. K., et al. (2007). "Intermittent preventive treatment of malaria in pregnancy: evaluation of a new delivery approach and idea of ability to cure quickly, with weakness as a side effect. ANC services perceived as only supplying drugs and for obtaining the clinic card. Malaria was seen as serious and pregnant women (and children) were seen as the most vulnerable. ITNs were not used because of their high cost and perception that the chemicals they contained were dangerous and could influence the outcome of a pregnancy. Adolescents, primigravidae, and men not seen as at risk. Adolescents do not use health facilities if pregnant because they try to abort due to the stigma associated with adolescent pregnancy. Cost and non-availability were constraints to ITN use, also chemicals and smell of repellents was reported to make women vomit. Women reluctant to buy ITN because this required money and if they spent money their husband would accuse them of having an affair with another man. Women attended ANC to get card, in case of problems during delivery.

Women attended ANC to get card, in case of problems during delivery.

Women that visited the health facilities were more likely to have greater knowledge of MiP and use bed nets more often. Women accepted IPT due to previous experience of MiP. Women that accessed

Adolescents were not seen as vulnerable to malaria. Women that visited the health facilities were more likely to have greater knowledge of MiP and use bed nets more often. Women accepted IPT due to previous experience of MiP. Women that accessed
the policy implications for malaria control in Uganda.”


International Health 2: 52-58.


To explore whether private midwives can provide prevention of mother-to-child transmission of HIV integrated with malaria prevention services in pregnancy and assess how this affects the access to and equity of services.

Interviews; (household survey).

Opinion leaders (n=12); local council officials (n=20); community health workers (n=15); teachers (n=8); policemen (n=5); drug shop owners (N=23); pregnant women (n=22).

Civic leaders; HIV positive women; local council officials; midwives; teachers; pregnant women; non-pregnant women (n=66).

TOasses the burden of malaria in relation to scaling up interventions.

Interviews; (household survey).

Opinion leaders (n=60).

To collect information on malaria and anaemia prevention behaviour amongst pregnant women.

FGDs; informant interviews; (questionnaire survey).

Pregnant women - both users and non-users of ANC; maternity health workers (n=4); TBAs (n=7); women’s group leaders (n=27).

Women with children and pregnant women (8 IDIs, 8 FGDs);

IPT through TBAs, and drug store vendors trusted IPT because trusted them. The study enlisted support of husbands and this promoted acceptability.

Pregnant women (and children) were viewed as being most vulnerable to malaria. Drugs were kept for emergencies, and respondents self-medicate rather than going to the health facility, unless their illness gets worse. Price of drug more of a concern than dosage, side effects, expiry date. Expired drugs not linked to poor treatment of malaria.

Malaria and anaemia were seen as the most common problems during pregnancy. Malaria was viewed as preventable by chloroquine rather than nets. Most said they were satisfied with ANC quality. A small proportion knew services were free. ANC was therefore seen as costly.

Women perceived the administration of SP and the provision of ITNs as important parts of ANC services. ANC care was positively valued however for some women the only reason for attending ANC.
and health care providers in rural southern Tanzania.”


Mushi, A. K., et al. (2008). “Development of behaviour with regard to ANC and PNC in order to identify opportunities for improving maternal and newborn health services”.

*BMC Pregnancy and Childbirth* 9:10

To assess the knowledge, attitudes and practices in relation to malaria control, especially IPTp.

IDIs; FGDs. District Medical Officer (n=1); health service staff; Council Health Management Team (n=11); pregnant women.

**Tanzania**

Clinical officers reported that women are scared of side effects (including miscarriage) and may not swallow tablets. Different brand names seen as SP and not SP (even though both SP) and there were problems with provision e.g. clinics do not have clean water and cups. MIP among women leads to stillbirths, delivering a child with malaria, and too much bleeding during and after delivery, also persistent menstruation during pregnancy. Severe malaria was treated by traditional healers. Self-medication from drug stores was common. Reported negative experiences of ANC staff and services. Not all health staff understood IPTp.

To describe prospects, achievements, challenges and opportunities for implementing IPTp.

IDIs National level malaria control officers (n=8).

**Tanzania**

Coverage, especially of 2nd dose of IPTp is low. Problems of good monitoring of data. Late ANC attendance was reported to be a barrier for coverage; socio-cultural, economic factors contribute to this. Also, problem with the supply of SP, the effectiveness of DOT, poor skills and lack of knowledge of ANC staff; the reporting system, and problems with the health system more generally contributed to late ANC attendance.

High level of satisfaction with ANC services was reported. However complaints included: problems with transport; unnecessary referrals; varied users fees; unofficial payments and penalties; waiting times. The national ITN voucher scheme had encouraged women to visit ANC clinic.

To describe the experience and perceptions of pregnant women about costs and cost barriers for accessing ANC services and emphasis on IPTp in rural Tanzania.

FGDs; (structured “exit interviews” post ANC). Pregnant women; mothers with infants (24 FGDs).

**Tanzania**

Negative views of SP for pregnant women included adverse side effects, causing large babies (and
<table>
<thead>
<tr>
<th>Study</th>
<th>Methodology</th>
<th>Participants</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mushi, A. K., et al. (2003). &quot;Targeted subsidy for malaria control</td>
<td>FGDs; IDIs; (questionnaire survey).</td>
<td>Community leaders; parents of children under five; married and unmarried</td>
<td>Women had encountered pregnant women who were not willing to take SP. There were indications that women had taken SP in pregnancy without realising it. Pregnant women were aware of the availability of bed nets. However, other respondents demonstrated mixed awareness about scheme, how to take part, who the nets were for. And even discounted some could not afford. Also leakage.</td>
</tr>
<tr>
<td>in southern Tanzania.&quot;</td>
<td></td>
<td>women (22 FGDs); MCH health staff; retail agents (4 IDIs).</td>
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<td>women (22 FGDs); MCH health staff; retail agents (4 IDIs).</td>
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<tr>
<td>Ndyomugyenyi, Ret al. (1998). &quot;The use of formal and informal</td>
<td>FGDs; IDIs; (structured questionnaire).</td>
<td>Pregnant women (10 FGDs); TBAs (4 IDIs); health workers (4 IDIs).</td>
<td>Mothers attend ANC for examinations and for the ANC card. Some drugs, including chloroquine, are seen as causing abortion. Women complained of the cost and preferred to go to TBAs or neighbours. Health centres were lacking resources (staff and medicine). Formal health system was reported to be the last resort for treatment for malaria. Chloroquine had itching side-effect that deterred further use. Biterness of drugs was also perceived by some as indicating that they should not be used during pregnancy. Children were seen as a higher priority for protection against malaria than pregnant women. There were concerns about the effects of insecticide treatments for ITNs on the health of pregnant women (and children) (through breathing in the chemicals) and related to sleeping under the nets – this may results in miscarriage.</td>
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<td>services for antenatal care and malaria treatment in rural Uganda.&quot;</td>
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<tr>
<td>NetMark (2001). &quot;NetMark formative qualitative research on insecticide treated materials (ITMs) in Nigeria.&quot;</td>
<td>IDIs; FGDs; observations.</td>
<td>Parents (or guardians) of children under five (51 FGDs) (10 FGDs); traders of insect control products (26 IDIs).</td>
<td>Children were seen as a higher priority for protection against malaria than pregnant women. There were concerns about the effects of insecticide treatments for ITNs on the health of pregnant women (and children) (through breathing in the chemicals) and related to sleeping under the nets – this may results in miscarriage.</td>
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<td>NetMark (2001). &quot;NetMark formative qualitative research on insecticide treated materials (ITMs) in Senegal.&quot;</td>
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<td>Parents (or guardians) of children under five (51 FGDs) (10 FGDs).</td>
<td>Some respondents recognised pregnant women as vulnerable to malaria (far more identified children). There were some concerns about the effects of retracting nets on pregnant women and the foetus – due to the smell of the product.</td>
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<td>Parents (or guardians) of children under five (50 IDIs) (10 FGDs); traders of insect control products (32 IDIs).</td>
<td>Uganda</td>
<td>Pregnant women and children were viewed as being vulnerable to malaria (and therefore need special protection) - children more so than pregnant women. A minority of respondents linked malaria with miscarriages. Respondents were worried about the smell from mosquito coils and the harm this may cause to pregnant women. Although the concept of a mosquito was liked there were concerns about the effects of insecticide treatments for ITNs on the health of pregnant women and the foetus.</td>
</tr>
<tr>
<td>NetMark (2001). &quot;NetMark formative qualitative research on insecticide treated materials (ITMs) in Zambia.&quot;</td>
<td>Parents (or guardians) of children under five (50 IDIs) (10 FGDs); traders of insect control products (32 IDIs).</td>
<td>Zambia</td>
<td>Pregnant women and children were identified as being especially vulnerable to malaria infection. Some respondents reported that treating the ITNs could be harmful for pregnant women.</td>
</tr>
<tr>
<td>Okrah, J., et al. (2002). &quot;Community factors associated with malaria prevention by mosquito nets: an exploratory study in rural Burkina Faso.&quot; Top Med Int Health 7(3):240-248</td>
<td>Men (5 FGDs) and women (5 FGDs) with a child less than five in the household; medical personnel; local tailors; ITN sellers; ITN users; drug sellers (9 IDIs).</td>
<td>Burkina Faso</td>
<td>No one equivalent term for malaria in any of the local languages. Using chloroquine for pregnant women was reported as a means of preventing malaria. Using an ITN and other means of preventing malaria were also reported.</td>
</tr>
<tr>
<td>Smith, L. A. et al. (2010). &quot;Intermittent screening and treatment versus intermittent preventive</td>
<td>Pregnant women who participated in the randomised controlled trial of</td>
<td>Ghana</td>
<td>Women attended ANC clinic to discover if there were any problems with the pregnancy, particularly to ensure that the baby was correctly positioned. Although women mentioned various drugs that they</td>
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</table>
IPTp.

IST versus IPTp.

received in the ANC clinic and they were familiar with some malaria drugs participants from different study arms did not refer to having received a different drug during the clinical trial. The differences were diluted by other aspects of ANC care. Blood tests, though painful were accepted provided the purpose of the test was known. Obtaining an ITN was one of the motives for attending ANC clinic. Health workers treated the pregnant women well and women trusted health workers.

Women identified malaria as a health problem during pregnancy. Women who suffered from malaria refused to be admitted to hospital for treatment because they had other children to care for. Women were aware of the dangers of not taking malaria prophylaxis during ANC visits. Women preferred western drugs to the available herbal remedies for malaria and bought these over the counter (chloroquine and Fanisdar) and self treated. Lack of anti-malarials for IPTp so not all women received IPTp.

To explore community understandings of preterm birth, infections during pregnancy and perinatal mortality in Southern Malawi.

Mothers; fathers; grandmothers; (17 FGDs); women who have experienced preterm birth (n=11); health workers (n=5); TBAs (n=5):

Of the “modern” illness categories, after sexually transmitted infections, malaria and anaemia were mentioned as causes of preterm birth. Preterm birth is also attributed to “traditional” illnesses (one of which could be malaria), witchcraft, impurity related to sexuality, death and blood, hard work, violence and the inappropriate use of medicine. It was generally agreed that bitter medicine, including SP, caused miscarriages and still birth. Some
<table>
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<tr>
<th>Study</th>
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<tr>
<td>Waisa, P., et al. (2008). &quot;Acceptability of evidence-based neonatal care practices in rural Uganda – implications for programming.&quot; BMC Pregnancy and Childbirth 8:21</td>
<td>FGDs; IDIs.</td>
<td>Mothers less than 30 years (2 FGDs); mothers more than 30 years (4 FGDs); fathers (2 FGDs); childminders (2 FGDs); health workers (n=6); TBAs (n=4).</td>
<td>ANC is literally referred to as “drinking medicine” and associated with being ill. Thus when women are ill and attend ANC they expect to receive a lot of medication. However women are frustrated when they receive on three SP tablets. Cost of transport prevented many women from attending ANC four times. Many diseases included high fever during pregnancy are treated first at home with herbs.</td>
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<td>Winch, P. J., A. et al. (1996). &quot;Local terminology for febrile illnesses in Bagamoyo District, Tanzania and its impact on the design of a community-based malaria control programme.&quot; Social Science &amp; Medicine 42(7): 1057-1067.</td>
<td>Free listing; IDIs; FGDs; pile sorting; (questionnaire intervention).</td>
<td>Local officials; teachers; health workers. (40 IDIs).</td>
<td>Term perceived as corresponding closely to biomedical definition of malaria (homa ya malaria), actually is not associated with severe anaemia or MiP, even though public health education uses this term. Diseases were divided into “our diseases” and “their diseases”, the latter which included malaria, which outsiders were expected to ask about.</td>
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*Quantitative methods employed are listed in parantheses. IDI: in-depth interview. FGD: focus group discussion.*