

Review Article

What do we know as far as the intersection of gender and malaria control in sub-Saharan Africa is concerned? A narrative review

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ABSTRACT

In terms of the goals of the United Nations, several sub-Saharan countries aim at annihilating malaria by the year 2030. However, achieving such an objective requires strategies based on evidence and adapted to the context of vulnerability in which each of these countries operates. This narrative review provides evidence that there is a significant interdependence between gender and malaria that has to be taken in account. It identifies a significant gap in the availability of data on this interdependence and climate change which, moreover, is another phenomenon that disproportionately affects men and women and is susceptible to other complex inequalities. Challenges with regard to an interdisciplinary perspective as well as the design of an integrated conceptual framework for the study of the dynamics between gender, malaria and climate change remain and challenge researchers on the continent.

Keywords: Gender, Malaria, Sub-Saharan Africa

INTRODUCTION

Globally, a downward trend in malaria deaths has been recorded over the period 2000-2019. However, in 2020, deaths from malaria increased by 12% compared to 2019. On the one hand, this increase is due to the service interruptions during the COVID-19 pandemic; and on the other hand to the climate change.^{1,2} This last relation is confirmed more and more by mathematical models.^{3,4} Sub-Saharan Africa keep enduring the brunt of the disease invariably, recording the highest number of cases and deaths, which still keeps this condition among the major public health problems on the continent.⁵ This situation has now led the United Nations to adopt in 2021 a resolution for the annihilation of malaria, mainly to reduce by 90%, by 2030, the mortality rate due to malaria.⁶ We already have fairly detailed information on medical approaches to malaria prevention, diagnosis and treatment; on health policies aimed at facilitating people's access to treatment and the different community-based

approaches implemented in sub-Saharan Africa to control malaria.⁷⁻¹¹ By the way, very little information is available on the aspects of gender likely to influence the different stages of malaria management in Africa.¹² However, reflections have considered the possibility of a possible interaction between gender and management as well as the burden of malaria in Africa.¹³ They left, by plausible hypotheses, this vast field of research open. A detailed knowledge of this aspect is necessary to effectively support the implementation of new resolutions taken at international, regional and local level. This consideration is all the more relevant when one considers the fact that in Africa, women are the primary caretakers of the family, but they are not always able to make decisions about when and how to care for sick children. A gender perspective is therefore important in understanding how to eradicate malaria.¹⁵ In view of such findings, it is warranted to conduct a narrative literature review of published research on gender and malaria in sub-Saharan Africa.

LITERATURE REVIEW

We adopted a four-step methodology for our narrative review. Step 1 was the formulation of the literature search question based on keywords identified in the PubMed® bibliographic database. Step 2 was devoted to identifying relevant studies on the basis of the keywords. Step 3 was the selection of studies based on the inclusion criteria and step 4 was the mapping and interpretation of the data.

The PRISMA (Preferred reporting items for systematic reviews and meta-analysis) flowchart was used to report identified, excluded and included studies.¹⁶ The literature search question was broad: Is it possible that there is a link between gender and malaria that may induce differences in disease perception, exposure, prevention and access to treatment in sub-Saharan Africa?

Search strategy

We conducted a comprehensive literature search of the PubMed® database to identify all studies that examined the relationship between gender and malaria perception, exposure, prevention and access to treatment in sub-Saharan Africa.

In addition, additional studies that met the inclusion criteria for this narrative review were selected through the bibliographic references of previously identified studies. The search strategy included a set of keyword combinations selected according to their definition in the PubMed® MeSH Browser.

The bibliographic search key is: ((Malaria) AND (gender)) AND (Sub-Saharan Africa). The studies included in this narrative review met the following criteria: (1) original qualitative and/or quantitative studies; (2) conducted in communities/households; (3) describing the following: malaria and gender, gender-specific net use, gender-specific malaria perception, gender-specific malaria burden, gender-specific malaria prevention logics and practices; (4) conducted in a resource-limited country. Only articles in English were considered in order to understand the evidence produced on the subject.

In order to reduce study selection bias, three levels of screening were rigorously followed: (a) the titles and (b) the abstracts of all identified studies and their match with the literature search question were independently reviewed. Then (c) the full texts of the studies identified as the relevant were reviewed against the inclusion criteria.

At the first stage of the literature search, 1200 references were identified. The additional references identified from these were 11. Examination of the titles and abstracts led to the selection of 21 studies for further reading in full. Nine studies were eligible and were selected for data extraction (Figure 1).

The bibliographic reference management software Mendeley® was used to map the studies.

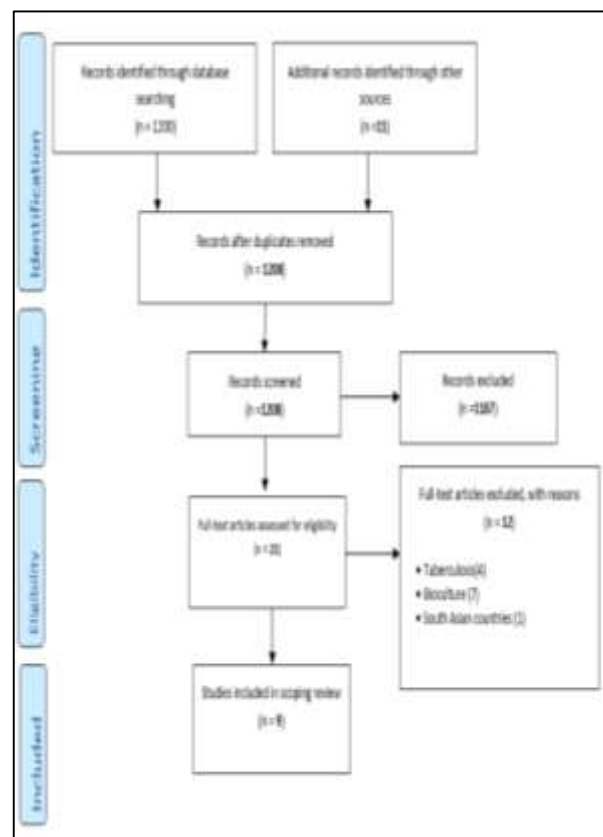


Figure 1: PRISMA flow chart for study selection
Bibliographic data, January 2023.

Graphic data and data extraction

A data extraction form was designed specifically for this purpose. From each eligible study, the following data were extracted author(s); title; year of publication; country of origin where the study was published; main objective of the study, aspects addressed; survey locations and targets; types of methods; overall nature of the results; gaps identified by the studies.

RESULTS

Countries where the studies were conducted

Of the 9 studies, the majority were published in English-speaking countries, including 2 in Kenya, 2 in Ghana, 1 in Sudan, 1 in Uganda, 1 in Ethiopia and 1 in Benin. One study did not specify the sub-Saharan African countries in which it was conducted. In this study, the authors stated that "the countries were classified into 3 geographical areas, Central Africa, East Africa and West Africa". Thus, the East Africa region included 10 countries (34.5%), Central Africa, 7 countries (24.1%) and West Africa, 12 countries (41.4%).¹⁷ The Francophone countries are less concerned and represent a small proportion (7 out of 26) in this set.

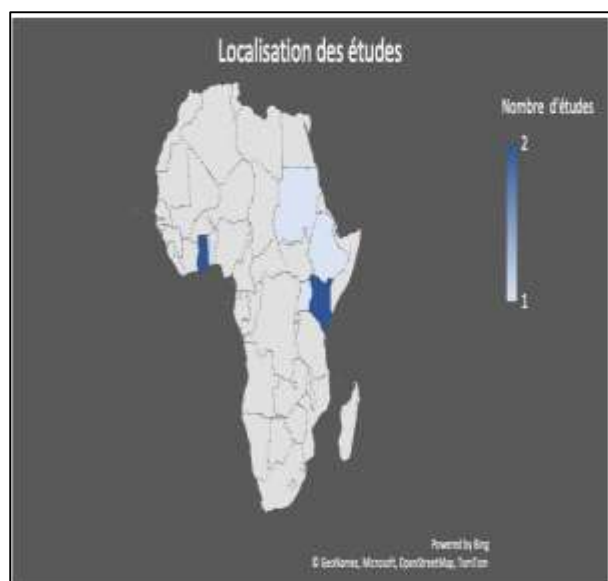


Figure 2: Geographical distribution of studies on malaria and gender in sub-Saharan Africa.

Bibliographic data, March 2023.

Issues addressed by the studies included in the review

Of the nine studies included in this narrative review, only one described gender differences in perceived malaria risk and factors associated with a high number of malaria episodes.¹⁸ Two addressed gender in relation to malaria prevention. Specifically, a study in Kenya examined the role of gender in malaria prevention and the adoption behaviour between men and female-headed households.¹⁹ Similarly, a study in Tigray, Ethiopia, examined how demand for malaria preventive health care differs according to the assessment of the household preferences.²⁰

A study in Ghana and another in Uganda assessed malaria from a gender perspective in a health facility and the gender difference among diagnosed patients.^{15,21} Other studies have explored the role of men and women in the procurement and use of ITNs. For example, a multi-country study in sub-Saharan Africa explored the role of household ITN supply in the variation of ITN use among household members in sub-Saharan Africa, while another study in Benin examined the determinants of ITN use in the context of a GDP promotion project in a rural area between 1992 and 1995.^{17,22} On the same aspects, a final study provided a situational analysis of gender inequalities in malaria burden and access to malaria health services in a community in their district.²⁴ Finally, only one of the studies examined the contribution of women to malaria control and management from a gender perspective.²⁴

Investigative methodology and focus of the studies

Only two of the nine included studies adopted a qualitative and participatory approach, such as focus

group discussions, in-depth individual interviews and ranking exercises to generate information on the issues addressed.^{23,24} Three adopted a mixed-methods approach to collect data from men and women at the village level.^{15,18,22} While four adopted a quantitative approach based on the use of recent cross-sectional household survey data; or data from malaria indicator surveys, demographic and health data in 29 sub-Saharan African countries.^{17,19-21}

With the exception of three studies, one of which focused on village health committee members and female care recipients and two on health facility users, the other six targeted both women and men in households and were community-based.^{15,21,24} This draws attention to the fact that the gender dimension considered in these studies is the one that describes the norms and power relations between men and women that lead to differences in the perception of malaria, risk, exposure, burden and care seeking. Other dimensions such as disability and the gender-related social inequalities, etc. are hardly addressed at all.

Points of knowledge made available in the studies

The studies included in this work have shown that women are more exposed to malaria than men and are more likely than men to report fever and seek care at the local health centre.²¹ Women's education level is significantly associated with malaria episodes.¹⁵ Women's access to health information has greater experience in malaria prevention, and knowledge about the cause and transmission of malaria significantly increases the number of practices adopted in male- and female-headed households.¹⁹ On risk, for example, it is said that a higher proportion of men attribute women's high malaria risk to their "biological weakness", while women in general perceive their high malaria risk as related to their role in the agricultural fields and their household responsibilities.¹⁸ This difference in perception can be explained by the fact that women are more likely to work in the wetter aspects of agricultural activities.¹⁸ Women play a key role in the prevention of malaria cases starting with their role in village health committees (motivation, organisation, health education of local communities). Women who receive care in malaria control health projects are more concerned about certain aspects of themselves in terms of protection, management of family malaria cases and health education. On the other hand, they have little knowledge of the role of malaria chemoprophylaxis on pregnancy.²⁴ Similarly, it was noted that in households with insufficient insecticide-treated nets, the use of insecticide-treated nets tended to be higher among women than men, whereas use was comparable among women and men in households with sufficient insecticide-treated nets.¹⁷

Qualitative data showed in the Benin study, for example, that men and women have similar perceptions of the cause of malaria (exposure to the sun, especially when

engaged in agricultural work).²² Nevertheless, because they have primary responsibility for the health of their families and are more aware of the vulnerability of children to malaria, women are more likely than men to want to purchase insecticide-treated nets. However, because the head of the household, who is most often male, sets family consumption priorities using family income, women often have to resort to using their own income, which is often considerably less than that of men, to purchase ITNs.²² In this context, married women are

willing to pay more to prevent malaria in their households than married men.²⁰ This gendered power relationship in the management of household resources is not exclusive to malaria prevention, but also applies to health care seeking. This was demonstrated by the study in Ghana which found that women who do not have short- or long-term economic support from male relatives, or who do not agree with their husbands or family elders on seeking appropriate treatment, have difficulties in accessing health care for children with malaria.²³

Table 1: Studies on gender and malaria.

Author(s) and year of publication	Location	Titles	Type of method	Targets	Survey locations	Global nature of results
Diirro et al, 2016	Kenya	The role of gender on malaria preventive behaviour among rural households in Kenya	Quantitative	Men and women	Householdes	Universal policy tools can be used to promote the adoption of integrated malaria prevention practices for both female and male headed households
Woldu and Haile, 2015	Kenya	Gender roles and perceptions of malaria risk in agricultural communities of Mwea Division in Central Kenya	Mixed (quantitative and qualitative)	Men and women	Village	Culturally prescribed gender roles in Mwea farming communities may play an important role in explaining the disparity in reported malaria incidence. While identifying the ecological and economic determinants of malaria is important, gender-based research can make a significant contribution to the development of effective and sustainable malaria reduction strategies.
Rahman et al, 1996	Sudan	Gender aspects and women's participation in the control and management of malaria in central Sudan	Qualitative	Member of the village health committee, women care recipients	Village	Health planners are urged to persuade subordinate communities of women in many African countries such as Sudan to play a more active role in the health programs and well-being of their communities.
Olapeju et al, 2018	West Africa, Central Africa, West Africa	Age and gender trends in insecticide-treated net use in sub-Saharan Africa: a multi-country analysis	Quantitative	NA	NA	Having enough ITNs in the household increases the level of use and decreases existing disparities between age and gender groups. Distribution of ITNs through mass campaigns and continuous distribution channels should be improved as needed to ensure that the households have the enough ITNs for all the members, including men as well as the school-age children.

Continued.

Author(s) and year of publication	Location	Titles	Type of method	Targets	Survey locations	Global nature of results
Lampietti et al, 2014	Ethiopia	Gender and preferences for malaria prevention in Tigray, Ethiopia Ethnohistory of Ethiopia view project	Quantitative	Men and women	Householdes	For malaria prevention, men and women see adult health as a priority because they are the first to earn money.
Tolhurst and Nyonor, 2006	Ghana	Looking within the household: gender roles and responses to malaria in Ghana	Qualitative	Men and women	Villages	There is a significant influence of women's access to resources and decision-making power on treatment-seeking behaviour for children with febrile illnesses, and the importance of addressing community or household malaria management from a gender perspective.
Rashed et al, 1999	Benin	Determinants of the permethrin impregnated bed nets (PIB) in the Republic of Benin: the role of women in the acquisition and utilization of PIBs	Mixed (quantitative and qualitative)	Men and women	Householdes	Support for community initiatives that focus on women's work, linked to intensive efforts to raise awareness among men about malaria transmission mechanisms and key risk groups, is seen as way to increase acquisition and use of GDP.
Quaresima et al, 2021	Ghana	Are malaria risk factors based on gender? A mixed-method survey in an urban setting in Ghana	Mixed (quantitative and qualitative)	Men and women	Community	Women are more likely to be exposed to malaria infections than men, especially due to their prolonged exposure to mosquito bites during the most dangerous hours. Our study has highlighted the need for future malaria control policies to be more socially and behaviorally sensitive and gender-sensitive.
Okiring et al, 2022	Uganda	Gender difference in the incidence of malaria diagnosed at public health facilities in Uganda	Quantitative	Patients (men and women)	Health care facility	Women contribute disproportionately to burden of malaria diagnosed in public health facilities in Uganda, particularly once they reach childbearing age. Contributing factors included more frequent visits to these facilities independent of malaria and a higher reported risk of seeking care at these facilities for febrile illnesses.

Bibliographic data, March 2023.

Overall nature of the studies' findings

Overall, the studies included in this narrative review report that women are more likely to be exposed to

malaria infections than men, particularly due to their prolonged exposure to mosquito bites during the most dangerous hours.¹⁵ They contribute disproportionately to the burden of malaria diagnosed in public health facilities,

especially when they reach childbearing age.²¹ Studies have also illustrated the significant influence of women's access to resources and decision-making power in the management (prevention and care-seeking) of malaria in households and the importance of addressing the issue from a gender perspective.²³ Existing knowledge has established that married women are willing to pay more for malaria vaccines than married men, while the choice of who receives the vaccines in the household is the same.²⁰ It is also known that having enough impregnated nets in the household increases the level of use and decreases existing disparities between age and gender group.¹⁷ To maintain this availability of ITNs in households, community-based initiatives focusing on women's work are urgently needed among other strategies.²² This suggests that tools to promote the adoption of integrated malaria prevention practices for both female and male-headed households are needed, and that prevention strategies should now be based on women's groups in many African countries to ensure the well-being of their communities.^{19,24} Gender-based research on aspects of perception, exposure, prevention and care-seeking is crucial and could significantly inform these interventions.¹⁸

DISCUSSION

The studies presented above show that gender has a strong implication on the management of malaria in all its aspects. They have shown that women contribute disproportionately to the malaria burden in households, due to the cultural norms and social realities that can often weigh on them.^{18,26} In low-income settings such as sub-Saharan Africa, these women play a varied role in addressing the malaria burden. They can be patients when they are directly affected (biological body), caregivers when a family member is affected (social body), and providers in health facilities when a community member is affected (medical body). This justifies the mobilization of in-depth analyses of the different phenomena that interact with these different roles and that are likely to further increase inequalities in the management of malaria between men and women. For example, the literature has established that gender relations are an integral part of the social transformations associated with climate change.²⁶ In other words, climate change may change the environmental ecosystem in which men and women work and thus alter their working hours. This could increase the vulnerability of women, because they are the most exposed to mosquito bites.¹⁸ Based on this consideration, it is important to study the root causes of women's vulnerability to malaria. However, in the context considered in this narrative review, very few studies on malaria, gender and climate change have been carried out, which poses a challenge to social research on climate change that is gender blind, omitting key aspects of social life in a changing climate.²⁶

Furthermore, there are challenges related to the study of the dynamics between these three phenomena,

particularly with regard to the conceptual framework that will support the related reflections. We can therefore argue for the design of an integrated conceptual framework for analyzing gender vulnerability related to malaria in a context of climate change. Also, the dynamics between gender, malaria and climate change will need to be explored by research from an interdisciplinary perspective in order to overcome the inadequacies of the patchy statistical data disaggregated by sex. In other words, the interconnected positioning of disciplines to explore the different dimensions of these dynamics is as essential as the study of the dynamics themselves.

Limitations

Even if the goal of this review was to take stock of the work done on gender and malaria, we recognise that there are limitations that could arise from the methodological approach used to carry it out, or from our ability to take into account certain aspects in the analysis and synthesis of the information. The limitations we are aware of are the following: Considering only studies published in English (linguistic bias) and considering only one database (PubMed®).

CONCLUSION

This narrative review has indicated that men and women experience and bear the burden of malaria differently based on their role in social spaces. Studies conducted in sub-Saharan Africa on gender and malaria are fewer and, moreover, rarely conducted in francophone countries. The overall findings of those already carried out indicate that disparities exist between women and men in terms of exposure to malaria, care-seeking, expenditure and decisions in managing the disease. The review provides evidence that there is a significant interdependence between gender and malaria. There are significant gaps in the availability of evidence on this interdependence, and climate change is another phenomenon that disproportionately affects men and women and creates other complex inequalities. Challenges in terms of research, positioning of different disciplines and the design of an integrated conceptual framework for the study of the dynamics between gender, malaria and climate change remain. These challenges offer promising research opportunities for researchers from different disciplines in sub-Saharan Africa.

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