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Barriers to malaria prevention in US-based travellers visiting friends and relatives abroad: a qualitative study of West African immigrant travellers†

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Abstract

Background: Over half of malaria cases reported in the USA occur among people travelling to visit friends and relatives (VFRs), predominantly to West Africa. Few studies have queried VFR travellers directly on barriers to seeking pre-travel care. We aim to describe the knowledge, attitudes and practices of VFRs travelling to malaria-endemic countries from the USA. With these

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Authors' contribution

E.W., A.A., K.A., J.G., C.C., S.D., D.W., A.B., D.W. and W.S. made substantial contributions to the conception or design of the work. E.W., H.V., A.A., J.A., L.S., D.W., A.B. and D.W. participated in data acquisition, analysis, or interpretation of data for the work. E.W. and H.V. drafted the manuscript, and all authors participated in revising it critically for important intellectual content

Supplementary data

Supplementary data are available at *JTM* online.

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findings, we aim to design interventions to encourage preventive behaviours before and during travel.

Methods: Sixteen focus groups were held in two US metropolitan areas with West African immigrant populations: Minneapolis-St. Paul, MN, and New York City, NY. A total of 172 people from 13 African countries participated. Focus group discussions were audio-recorded and transcribed, and modified grounded theory analysis was performed. Participants reviewed themes to verify intent of statements.

Results: Participants described the high cost of provider visits and chemoprophylaxis, challenges in advocating for themselves in healthcare settings and concerns about offending or inconveniencing hosts as barriers to malaria prevention. Cultural barriers to accessing pre-travel care included competing priorities when trip planning, such as purchasing gifts for family, travel logistics and safety concerns. When participants sought pre-travel care, most consulted their primary care provider. Participants expressed low confidence in US providers' knowledge and training about malaria and other tropical diseases.

Conclusion: Barriers to pre-travel care for VFR travellers are multifaceted and extend beyond their perception of disease risk. Only some barriers previously reported in anecdotal and qualitative literature were supported in our findings. Future interventions should be aimed at barriers identified by individual communities and involve primary and travel specialist healthcare providers. Additional work is needed to address systems-level barriers to accessing care and establishing community-based programs to support West African VFR traveller health.

Keywords

Malaria; VFR travellers; West Africa; chemoprophylaxis

Background

Global malaria prevalence and mortality have decreased by half in the past decade; but in the USA, prevalence of imported malaria has steadily increased,¹ concomitantly with an increase in global travel. Persons travelling to visit friends and relatives (VFRs) have the highest malaria burden in the USA, among adults and children.^{1,2}

Barriers to preventing malaria in VFRs have been reported anecdotally^{2,3}; however, systematic or prospective data on these travellers are lacking, and few interventions have specifically targeted West African VFRs.⁴⁻⁷ Systematic, high-quality focus group discussions have not been reported.

New York City (NY, USA) is a major area of resettlement for many immigrants to the USA, and in 2015, a total of 218 malaria cases were reported.¹ From 2004 to 2006, over half of the confirmed malaria cases in New York City followed visits to Nigeria and Ghana, with the Bronx having twice the malaria incidence of other city boroughs.⁸ Over 22 500 persons born in West Africa reside in Minnesota (MN, USA), 20 000 of whom live in the seven-county Minneapolis-St. Paul metro area.⁹ Minnesota also has the largest Liberian population in the USA.

We aim to describe the knowledge, attitudes and practices of US-based West African VFRs from NY and MN regarding malaria. We describe barriers identified by focus group participants and compare these findings to the existing literature.^{2,3} These data can be used to design interventions to address VFRs' barriers to accessing pre-travel care and adherence to malaria preventive measures.

Methods

Participant recruitment

West African-serving community-based organisations (CBOs) recruited participants for MN focus groups, and a Community Advisory Board (CAB) comprising West African community organisers and health professionals recruited participants to the NY focus groups from within their professional, organisational and social contacts.¹⁰ In NY, a study staff member of West African descent trained in qualitative research facilitated all eight sessions. In MN, West African staff from the partnering CBOs served as focus group moderators and were trained in facilitation techniques. In both MN and NY, a study staff member attended each focus group to provide logistic support and take notes.

Participants were adults who self-identified as West African and had travelled to West Africa in the past 10 years or planned to travel within 1 year. The participant population was a convenience sample of those who responded to recruitment materials posted on social media, in addition to direct recruitment of known community members who had travelled to West Africa. Partners were asked to recruit individuals from a range of ages, education levels and occupations, and where possible to balance genders in each session. Additional follow-up and recruitment efforts by the CBOs (MN) and CAB (NY) were done by telephone, e-mail or face-to-face contact. Reminder text messages were sent the day before the session.

Focus group format

Focus groups were held on evenings and weekends at familiar, convenient and accessible locations for most participants, in neighbourhoods with a high density of West Africans (MN) and in community centres and mosques with large populations of West African congregants (NY).

Sixteen sessions were held between June and November 2016 (eight sessions each in Minneapolis-St. Paul metro and Bronx, New York City). Each session lasted 1.5–2 h and was conducted in English; a meal was served, and a \$25 gift card was provided. Each session included between 8 and 10 participants (range: 5–18). Written consent was obtained from each participant, and a printed copy of the consent form was provided. An optional demographics form was distributed at the beginning of each focus group. A semi-structured question guide, including clarifying prompts was used by each facilitator to guide the discussion and enhance consistency across groups (Appendix S1). Sessions were audio-recorded, transcribed by a professional service and de-identified before data analysis. During transcript finalisation, focus group facilitators were contacted for corrections or clarification where accents or dialects impeded initial transcription. Participants reviewed major themes

from the analysis and provided input during public forum events where preliminary results were shared.

Data analysis

Following each session, preliminary coding was performed. Selections from each transcript were coded using an open structure by staff members who attended at least one focus group; a kappa of 0.90 indicated high inter-coder reliability. Subsequently, all transcripts were analysed together to collect, expand or refine major themes present in multiple groups. Themes were derived using an inductive approach. Transcripts were coded using Atlas.ti (Ver. 8.0, Scientific Software Development, Berlin, Germany). Coding trees are provided in Appendix S2.

Focus group sessions continued until saturation, when no new information emerged from the sessions.¹¹ Study staff estimated information saturation occurred near the 13th focus group session. The Minnesota Department of Health (IRB#15–368) and Einstein College of Medicine (IRB#2016–6773) institutional review boards approved and monitored this study.

Results

Participant demographics

From 13 primarily West African countries, 172 adults participated. No individuals declined participation; a small number left the focus groups early, most often because of schedule conflicts.

Of the 172 participants, 90 of 172 (52%) participants completed the optional demographics form. Participants had lived in the USA from 2 weeks to 35 years. Slightly more than half identified as female (Table 1).

Health information sources

The most common source for health information before travel was the primary care physician. Participants chose this resource because of the physicians' familiarity with their medical history, established trust and ease of scheduling appointments.

Fewer participants recounted using specialised travel medicine clinics and they reported mixed experiences. Some were satisfied with the services they received, but many recounted hurdles or concerns.

...when you go to most of these travel clinics, it's the same day they're going to Google this information out for you... they don't know anything about the area...; they going to give you something like a printout, you know? So I don't see that clinic is a very good place to get this type of information....

Most participants acknowledged that visiting a doctor before travel was prudent; however, there were consistent reports of distrust of the US healthcare system. Some participants recounted personal or family experiences of racism or discrimination in healthcare settings, and others suggested that US-trained physicians may lack adequate knowledge or training

about malaria to be a valuable information resource. This sentiment was especially strong in the MN focus groups.

P1: The reason why most people don't go to a hospital, because some people fear if you are reported to have, you go to the hospital with malaria, they quarantine you.

P2: They make it look like the whole world is coming to an end.

P3: Like you got Ebola.

Regardless of whether they planned to seek medical consultation before travel, most participants searched for malaria prevention information on their own, either on the Internet, or by asking friends, relatives or other community members who had recently travelled about their experiences.

Infrequently, pre-travel health information was sought from consulates/embassies, employer or school resources, health departments, travel agents and community cultural organisations. A few individuals were unaware of any travel health resources. A minority of participants felt they had adequate knowledge of pre-travel recommendations and did not seek any advice.

Pre-travel barriers

Participants described a number of barriers to successfully acquiring malaria chemoprophylaxis and pre-travel medical advice, most commonly high cost. Participants noted that health insurance coverage for these services was limited or difficult to predict, and for some, past experiences with large out-of-pocket costs deterred the use of these services. One participant recounted, *'I went to the health place to get my medication... and they said, "Oh, insurance will cover it." When I came back, I covered the bulk of the bill. The insurance only covered a little bit'*. Less frequently cited reasons for not using pre-travel clinics included inaccessible clinic locations, long wait times for appointments or fear of hospitals/needles.

Some participants successfully used travel clinics and found the experience satisfactory. Using pre-travel services allayed worries about being unprepared for travel-related diseases; notably, the individuals who expressed positive feelings towards travel clinics also reported that their visits were covered by health insurance.

I use my insurance.... For me, going to the travellers' clinic was not even a question. I will be there. Shoot me with whatever you need to shoot me with, give me whatever pills. I'm rather safe than sorry.

Most participants commented that they have competing priorities for their time, including preparations to make before their trips such as in-country safety, housing, non-malarial disease prevention (especially foodborne and waterborne illness); preparing gifts for friends and relatives; paying for plane tickets and travel; packing; and purchasing supplies (e.g. clothing).

Participants also noted VFR-specific barriers, such as the potential for last-minute travel for a family illness or death. In these situations, the trip's urgency precluded many pre-travel

preparations. Some participants also noted that preconceived ideas about malaria may make acquiring chemoprophylaxis less of a priority for VFRs.

... I had a bout of malaria back in April. ... It never crossed my mind that I should see a travel doctor. I just want to get on the plane and go... there's nothing I can do; if [malaria] comes, I'll face it ... Now I know I have to go do a number of things as in get prepared.... I haven't been in that environment for such a long time, and to go back to that environment, I know better now.

During-travel barriers

Experiences related to chemoprophylaxis use varied; some individuals found the process quite simple, while others were unable to complete the regimen because of side effects, inadequate number of tablets dispensed for their trip (possibly due to insurance limits on pills dispensed¹²) or a desire to leave extra tablets in their home country for use by those who live there. A number of individuals felt conflicted between the desire to use chemoprophylaxis and cultural sensitivity about doing anything that would mark them as different or requiring special treatment by their hosts.

... We know that our people has the mentality that when you come from America, they expect you to stay where they are. And even you come with the notion that your health is important... they tend to feel that you're trying to ostracise them from your life, try to make them feel that they aren't important. So planning is good. Taking medication is good, but also educating the people you're going to visit is important.

For those who were unable to afford chemoprophylaxis in the USA, less desirable options were considered, such as for-going chemoprophylaxis entirely or buying medication after arrival in the destination country. Others opted to treat only if they became ill.

Strategies to prevent mosquito bites were widely reported, including mosquito repellent, insecticide coils in sleeping areas, sleeping in well-screened rooms and avoiding areas with standing water. Participants reported that additional vigilance should be taken when travelling with children, including the use of mosquito nets.

There was general agreement that while prevention behaviours are important, mosquito bites were inevitable, especially as much socialising occurs outdoors in the evenings. Similarly, very few participants reported using bed-nets; they were generally noted to be uncomfortable or challenging to set up when staying with friends and relatives in their homes.

My experience... is that people lack resources... So if you go to visit home where there is no air conditioning, no fan, and when the night falls everything is locked up, everything is sealed up because of theft. So now you're faced with the problem of opening the window and getting some fresh air, which means that mosquito will come in the room...

Finally, many participants emphasised that good hygiene and preparation were needed to avoid falling ill (especially with foodborne or waterborne illnesses). These strategies were

indirectly linked to malaria prevention, as it was noted that many diseases can have similar symptoms to malaria. While some participants trusted physicians in their home countries to treat conditions such as malaria, others noted that prevention was of utmost importance because of substandard or lack of available healthcare options at their destination.

...that's one of the reasons we should be very careful, because you leave from here, maybe you already be diagnosed with diabetes. With palpitations. Cholesterol, because back there we don't know too much about cholesterol...So one of the things you gotta be careful... because the doctors there don't have the equipment in the hospitals.

Discussion

Barriers to pre-travel care for West African VFRs are multifaceted and extend beyond their perception of disease risk. Past studies where West African VFR travellers were interviewed reported similar barriers of prohibitively high cost for malaria chemoprophylaxis^{5,7,13} and concerns about inappropriate response if travellers return with malaria or US providers' lack of malaria management experience.⁵⁻⁷ In our study, participants recounted negative experiences with the US healthcare system that may affect their decisions to seek pre-travel care. Of note, this study was conducted less than 2 years after the West Africa Ebola epidemic, and immigrant communities, especially in MN because of the large Liberian population, felt heavily impacted by local stigma and changes in hospital practices at that time. Participants in our study also echoed UK-based traveller concerns that using mosquito bite prevention or chemoprophylaxis measures might insult their hosts or negatively differentiate VFRs from the local population they plan to visit.⁵

Surprisingly, however, many barriers previously reported in the anecdotal and qualitative literature were not supported in our study. VFRs' concerns about immigration status, language barriers or lack of 'culturally appropriate' resources were not identified as barriers to using pre-travel services in our study (Table 2). Also, the literature reports that VFRs do not use chemoprophylaxis, use it incorrectly or prefer to buy drugs abroad (Table 3). Instead, the main barrier to chemoprophylaxis use in our population was the cost of acquiring it in the USA. In MN, participants overwhelmingly reported having health insurance, but experience with out-of-pocket costs varied widely among participants. Insurance was mentioned less frequently in NY groups; cost remained a strong concern, but whether high out-of-pocket costs resulted from inadequate insurance benefits or lack of health insurance was not clear. While tactics to overcome this barrier, such as sharing medications with multiple people or buying drugs abroad, were mentioned, these were considered only when other alternatives did not exist.

Finally, our findings add nuance to the perception that VFR travellers live 'like locals' and thus approximate the disease risk of local residents (Table 4). Our participants noted that to visit friends and relatives, they may need to travel to less developed parts of their home countries. Most participants, however, reported that they did not abandon their mosquito bite prevention plans (clothing, insect repellents, chemoprophylaxis, etc.), but rather acknowledged that it was especially challenging to prevent all contact with mosquitoes. Still,

most participants reported maintaining vigilance against mosquitoes, even if these practices were more stringent than those used by their hosts. To overcome the barriers to the use of particularly intrusive mosquito bite, preventive measures such as bed-nets, an especially strong motivator for use was required, such as to protect children²⁴ or a particularly health-conscious traveller.

Based on these findings, intervention strategies to reduce barriers should be developed in both community and clinical settings. For example, interventions targeting primary care providers should emphasise that systems-level barriers beyond the control of the traveller exist, such as chemoprophylaxis cost and insurance coverage of visits at specialty travel clinics. Improved communication and collaboration between primary care and travel medicine providers is needed to support VFR travellers in overcoming these barriers. Other reported interventions promoting chemoprophylaxis use and preventive behaviours in VFR travellers lack formal evaluation.²⁵ Future community-based programming must address the unique barriers VFR travellers face and take into consideration measuring the impacts of social and behavioural motivators which influence decision-making before and during travel.²⁴ Further, comparing experiences of VFRs who contract malaria and those who do not could shed light on barriers that most strongly correlate with disease risk.

Key limitations include the potential for social desirability bias and response bias in a group setting, and the possibility that individuals recruited do not represent the breadth of West African VFR travellers in the USA. However, holding focus groups in two different US geographic areas and repeating focus groups using a standard discussion guide until no new themes emerged, increased the likelihood that we gathered the most important themes. Similarly, the views of community members with physical, language or financial barriers to focus group participation and those uninterested in travel health were likely underrepresented, despite achieving information saturation.¹⁰

Conclusion

Barriers to pre-travel care for VFRs are multifaceted and extend beyond their perception of disease risk. Future interventions should consider the role of healthcare providers (both primary care and travel specialists), mechanisms to address systems-level barriers to accessing care, and community-based programs to support VFR traveller health.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Table 1.

Participant demographics for 16 focus groups held in Minnesota and New York

	Minnesota	New York	Total
Total participants	n = 108	n = 64	n = 172
Demographics form completed	n = 44	n = 46	n = 90
Gender	n = 35	n = 46	n = 81
Female	51%	57%	54%
Country of birth	n = 43	n = 45	n = 88
Ghana	5%	49%	27%
Liberia	30%	0%	15%
Sierra Leone	26%	0%	13%
Nigeria	21%	2%	10%
Niger	0%	13%	7%
Other: Cameroon (5), Senegal (5), Guinea (4), Ivory Coast (3), Mali (3), USA (2), Burkina Faso (1), DR Congo (1), Togo (1)	21%	36%	28%
Age (years)	n = 40	n = 46	n = 86
Mean (standard deviation)	44.9 (15.3)	45.5 (11.7)	45.2 (13.4)
Median	40	44	43.5
Range	18–82	20–73	18–82
Employment	n = 42	n = 42	n = 84
Full-time	55%	45%	50%
Part-time	14%	14%	14%
Self-employed	7%	12%	10%
Retired	0%	2%	1%
Unemployed	24%	26%	25%
Education	n = 42	n = 43	n = 85
Less than high school	12%	26%	19%
High school	5%	7%	6%
Some college or bachelor's degree	48%	35%	41%
Post-baccalaureate	36%	33%	34%
US residency	n = 41	n = 46	n = 87
Mean (standard deviation years US resident)	15.0 (8.8)	17.4 (8.7)	16.3 (8.8)

	Minnesota	New York	Total
Median	15.0	16.25	15.5
Range	0.06–23	0.04–38	0.04–38
Mean years between immigration and first trip	-	-	10.9 ($n=9$)
Range			6–13.9
Travel			
Has travelled back at least once	$n = 43$	$n = 46$	$n = 89$
Plans to travel back within 1 year	77%	78%	78%
Mean years since the most recent trip	2.5	3.0	2.8

Table 2.

Barriers to accessing pre-travel care for travellers visiting friends and relatives (VFRs) reported in the travel medicine literature compared with those identified during focus groups held in Minnesota and New York with West African immigrants

Barrier reported in literature	Source	Supported in present study
Don't go to travel clinics	14-16	No
More likely to seek care if travelling with children	7	Yes
Travel clinics aren't culturally appropriate/comfortable	3 ^a ,17,18 ^a	No
Long wait times for appointments make scheduling difficult	6	Sometimes
Underinsured or not insured, and specialty travel care is often not covered	2 ^a ,3 ^a ,15 ^a	Sometimes
Cost is #1 barrier both to seeking pre-travel care and to following advice and recommendations	7,18 ^a	Yes
More likely to visit primary care than specialty travel clinic pre-travel	2 ^a ,3 ^a ,19	Yes
Scepticism about training of healthcare practitioners who 'read about malaria in a book'	6,7	Yes
More likely to make last-minute trips and get incomplete pre-travel advice because of separate medical records in different health systems	6	No
Lots of last-minute trips and don't have time to seek pre-travel advice	2 ^a ,7,17	Sometimes
Language barriers preventing access to care	2 ^a ,3 ^a ,16 ^a ,18 ^a	No
Overseas trips are 'routine', and don't warrant pre-travel care	2 ^a ,3 ^a	Rarely
Don't access pre-travel care because of fear of immigration authorities	2 ^a ,18 ^a	No
Novel barriers identified in present study		
Negative healthcare experiences in the past, dissuading them from seeking pre-travel care		
Competing priorities and pre-travel tasks, which sometimes take precedence over scheduling pre-travel appointments (purchasing gifts for family, travel logistics, coordinating schedules, etc.)		

^a Anecdotal barrier noted in publication which was not based on authors' primary research results.

Barriers to accessing and using chemoprophylaxis for travellers visiting friends and relatives (VFRs) reported in the travel medicine literature compared with those identified during focus groups held in Minnesota and New York with West African immigrants

Table 3.

Barriers reported in literature	Source	Supported in present study
High cost for travel vaccines and prescriptions	1,6 ^a ,17	Yes
Easy and satisfactory prophylaxis access through their general practitioners (for West Africans in the UK)	6	n/a
Don't use chemoprophylaxis	2,4,6 ^a ,14 ^a ,18,20,21	No
Incorrect use of chemoprophylaxis (stop early, don't follow regimen)	2,4,6,17 ^a ,22 ^a	Sometimes
Side effects or risk of side effects	2,4,6,17,21 ^a	Rarely
Prohibitive cost of chemoprophylaxis for prolonged trips, or when travelling with children/family	2,4,5,6	Yes
Preference to treat malaria if it occurs, as treatment is less expensive than prophylaxis	7	Rarely
Preference to purchase chemoprophylaxis more cheaply in home country	2,4,6,7,22 ^a	Sometimes
Potential for substandard drugs abroad but believe risks could be overcome by using own or friend's/relative's knowledge about reliable pharmacies	5	Yes
Chemoprophylaxis is less likely to be available in neighbourhoods with high VFR traveller populations	22	No
Novel barriers identified in present study		
Prescriptions for chemoprophylaxis insufficient for their entire trip (ran out of tablets early)		
Preference for medications from the USA, but if filling prescriptions is cost-prohibitive, they consider buying medications abroad or opting to treat if they fall ill		

^a Anecdotal barrier noted in publication which was not based on authors' primary research results.

Table 4.

Barriers among travellers visiting friends and relatives (VFRs) to implementing mosquito protective measures while travelling reported in the travel medicine literature compared with those identified during focus groups held in Minnesota and New York with West African immigrants

Barriers reported in literature	Source	Supported in present study
Accommodations without bed-nets or screens	3, ^a	Sometimes
Longer trips than non-VFRs	2, ^a 3, ^a 4, ^a 15, ^a 16, ^a 17, ^a 18, ^a 23, ^a	Sometimes
Approximation of risk to that of locals ('living like locals')	2, ^a 3, ^a 4, ^a 16, ^a 18, ^a 23, ^a	Sometimes
Rural exposures expose them to greater risks	6, ^a 18, ^a	Yes
Debilitating illness could ruin a trip, but sometimes certain activities are 'worth the risk'	6	Yes
High-risk travel during life stages (pregnant, comorbidities, young children)	2, ^a 15, ^a 20	n/a
Chemoprophylaxis use negatively marks VFR travellers as different from the local population and people they visit	5	Sometimes
Don't use mosquito bite prevention such as repellent	2, ^a 19	No
Preference for mosquito avoidance to using drugs for malaria prevention (covering up at night, using repellents, avoiding stagnant water and using local protective products)	5,6	Yes
Previous negative experience deters bed net usage (exacerbating heat and claustrophobia) and belief that there are more modern ways to prevent mosquito bites	5,6	Yes
Non-routine insecticide in bedroom before sleeping, but this might not be done routinely	5	Yes
Lodging choices are usually not near mosquito breeding sites but acknowledge that sometimes neighbours do not maintain adequate sanitation	5	Yes
Mosquito bite avoidance is not always possible, especially if sitting outside in the evening	5	Yes
Novel barriers identified in present study		
Hand hygiene and food/water sanitation are used as malaria prevention tasks to avoid foodborne or waterborne illnesses that may mimic the symptoms of malaria and confound diagnosis and treatment		

^a Anecdotal barrier noted in publication which was not based on authors' primary research results.