ABSTRACT

Plasmodium parasites cause serious, but treatable febrile illness if managed early with effective therapies. Malaria infections have been linked to various factors like vector dynamics, environmental changes and individual or community factors such as malaria knowledge and practice behaviours. This study compared these latter two factors between South African and Nigerian healthcare professionals and communities. As well as assessed the efficacy of fifteen commercially available mosquito repellents reportedly used and available in Johannesburg South Africa.

The cross-sectional survey on the knowledge, attitudes, and practices of respondents on malaria management was conducted with a semi-structured questionnaire. A total of 1,144 questionnaires were completed by 752 South Africans (65.7%) and 392 Nigerians (34.3%). Most respondents had good malaria-related knowledge (68.8%; n = 779), with a significantly higher ($p < 0.001$) proportion from South Africa (73.8%) compared to Nigeria (59.2%). The malaria-related knowledge was found to be associated with the respondent's gender ($p=0.022$), educational status ($p<0.034$), occupational status (<0.001) and age ($p<0.001$). More misconception on the malaria vector was seen among the South African respondents. The healthcare professionals (HCPs) knowledge of first line therapies for management of both uncomplicated and severe malaria was significantly different ($p<0.001$) between the study countries. In general, a total of 82.1% of the participants have used mosquito repellents with 84.5% in Nigeria compared to 80.8% South Africans.

After collating information on commercially available repellents, the efficacy of 15 commercial repellents were compared to DEET in a non-contact test chamber housing starved female *Anopheles gambiae* mosquitoes. The DEET (Tabard™ lotion; 19.5%) provided a mean protection of 99.1 ± 0.87% for all four tested volunteers; with a slightly higher mean protection of 99.45 ± 0.3% obtained with Medi-scabiol™ soap (citronella oil). Of the recorded repellents, only 59.8% specified SABS approval on the product.

In conclusion, despite the good knowledge and attitude of the respondents, there were some misconceptions amongst the respondents from both countries that could be improved through continuing education. Furthermore, the citronella-based repellent products are effective for short-term personal protection from mosquito bites, however, DEET remains the gold standard repellent product for long-term protection. Consumers are advised to check for SABS approval for any product they intend to use to ensure optimal protection.