

09. Knowledge, Acceptance, and Hesitancy Toward Malaria Vaccination Among Healthcare Providers in Conflict-Affected Sudan: A Cross-Sectional Study

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BACKGROUND: Malaria remains a major public health challenge in Sudan, particularly in regions affected by ongoing armed conflict and displacement. In October 2024, the malaria vaccine was introduced in Al-Qadarif and Blue Nile states as part of national malaria control efforts. Healthcare providers play a critical role in vaccine promotion, public trust, and successful immunization campaigns. However, vaccine-related concerns and misinformation may influence acceptance, especially in humanitarian settings. This study aimed to assess knowledge, acceptance, hesitancy, and associated factors related to malaria vaccination among healthcare providers in conflict-affected regions of Sudan. **METHODS:** A descriptive cross-sectional study was conducted between January and February 2025 at teaching hospitals in Al-Qadarif and Al-Damazin, Sudan. A total of 342 healthcare providers participated through an online self-administered questionnaire. Eligibility criteria included active employment in healthcare facilities within the study areas during the vaccine rollout period. The questionnaire assessed participants' knowledge of the malaria vaccine, level of acceptance, concerns regarding vaccination, and sources of information. The primary outcome was high vaccine acceptance. Data were analyzed using SPSS version 25. Descriptive statistics were used to summarize participant responses, while bivariate analysis and multivariate logistic regression were performed to identify factors independently associated with vaccine acceptance and control for potential confounding variables. **RESULTS:** Among the 342 healthcare providers included in the study, only 35.1% demonstrated good knowledge regarding the malaria vaccine, whereas 56.7% reported high acceptance toward vaccination. High levels of concern were identified among participants (64.0%). The most frequently reported concerns included adverse effects following vaccination (57.0%), inappropriate vaccine storage and handling conditions within Sudan (56.4%), and uncertainty regarding vaccine effectiveness (42.7%). Social media platforms (48.5%) and healthcare professionals (45.0%) were the primary sources of vaccine-related information. In

multivariate logistic regression analysis, good knowledge of the malaria vaccine was the only independent predictor significantly associated with high vaccine acceptance (adjusted odds ratio = 1.71, 95% confidence interval: 1.04–2.84, $p = 0.036$). **CONCLUSION:** Despite moderate acceptance of malaria vaccination among healthcare providers in conflict-affected regions of Sudan, substantial knowledge gaps and vaccine-related concerns remain prevalent. Educational interventions targeting healthcare providers through professional training and digital communication platforms are urgently needed to improve vaccine literacy and address hesitancy. Strengthening knowledge about malaria vaccination may enhance confidence and support successful vaccine implementation in fragile humanitarian settings.

Keywords: Malaria Vaccine; Vaccine Acceptance; Healthcare Providers.