

Factors associated with non-adherence to standard diagnosis and treatment guideline in the management of malaria in pregnancy

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Abstract

Background: Non adherence to National Malaria Diagnosis and Treatment Guideline (NMTG) in the treatment of malaria in pregnancy contribute to the increase of poor maternal health and birth outcome effects related to malaria infections.

Objective: To determine the contributing factors for non-adherence to NMTG among the health care workers (HCWs) in public dispensaries and health centres in Kilimanjaro region.

Method: A cross sectional study in which the health care workers attending pregnant women were interviewed; 179 participants from 60 dispensaries and 16 health centres were interviewed between February and April 2018. Data management and analysis were performed using Statistical Package for Social Sciences (SPSS) version 20 for Window (SPSS Inc., Chicago, IL, USA).

Results: In this study 37.4% of the participants were not adhering to NMTG during the management of malaria cases in pregnancy. After controlling for potential confounders, factors which were associated with non-adherence to NMTG were; client overload (AOR=3.025; 95%CI 1.136-7.162; p-value=0.009) and inadequate supply of Rapid diagnostic tests (RDTs) (AOR=3.15; 95% CI 1.14-9.559; p=0.000).

Conclusion: Factors which are associated with non adherence to standard malaria diagnosis and treatment guideline are inadequate supply of diagnostic tests and clients overload in the public health facilities.

Key words: Malaria, Guideline, Non-adherence, pregnancy

Introduction

Poor adherence to standard malaria diagnosis and treatment guidelines has resulted to the spread of antimalarial drug resistance.^[1] This exposes more pregnant women to malaria, which increases the risk of poor health outcomes for mothers and infants.^[2] Placental parasitaemia can cause maternal anaemia and low birth weight, both of which are risk factors for neonatal mortality.^[3] In areas of Africa where malaria is endemic, the World Health Organization (WHO) recommends three approaches to malaria prevention and control: - uptake of Intermittent Preventive treatment in Pregnancy (IPTp), - sleeping under an insecticide-treated bed net (ITN), - effective clinical diagnosis and treatment of malaria.^[4]

However, in many countries more emphasis has been put on increasing the IPTp uptake as a means of preventing malaria in pregnancy,^[4] while other strategies like effective diagnosis and treatment are running slowly.^[5]

In sub-Saharan Africa, reports indicate different levels of adherence to malaria diagnosis and treatment guidelines.^[6] Effective malaria case management is a key strategy of malaria control and elimination.^[6] Accurate clinical assessment,

confirming the disease by light microscopy or the malaria rapid diagnostic test by testing blood samples must be done in all suspected malaria cases before treatment.^[7] Tanzania introduced the National Standard diagnosis and treatment guidelines for malaria in 2006 and revised these in 2014.^[8] However, in some parts of Tanzania, clinical diagnosis of fever is widely used by healthcare providers to diagnose malaria.^[5,8] In Tanzania there are few studies on adherence to malaria diagnosis and treatment guidelines among health care workers (HCWs).^[9]

Therefore, this study was designed to determine factors associated with non-adherence by HCWs to standard diagnosis and treatment guidelines in treatment of malaria in pregnancy.

Method

This was a descriptive cross-sectional study, involving HCWs (nurses which included midwives and clinical officers) who are attending pregnant women at public health centres and dispensaries in the Kilimanjaro region, Tanzania. It was conducted from February to May 2018. A structured questionnaire was used to interview 179 participants from 60 dispensaries and 16 health centres. These facilities were sampled based on the criteria of being public health facilities, attended by pregnant women, and with a laboratory available for diagnosing malaria with Rapid Diagnostic Tests (RDT) or microscopy. Referral hospitals were not included. The identification of facilities with these criteria were tracked via the District Health Information System (DHIS). The participants were all HCWs who are attending pregnant women, are involved in the management of malaria in pregnancy, and who were on duty on the date of interview.

Adherence to National Malaria Diagnosis and Treatment Guideline (NMTG) meant doing the malaria RDT or a blood smear. If the result is positive, only recommended anti-malarial drugs are prescribed; if the result is negative no anti-malarial drug is given.^[6]

Non-adherence to NMTG is when a client is suspected of malaria and a RDT or a blood smear is not done; or the result for the test is negative but she is still given an anti-malarial drug; or the result of the test is positive but no anti-malarial drugs are given or an incorrect anti-malarial or incorrect dose is prescribed.^[6]

Data management and analysis were performed using Statistical Package for Social Sciences (SPSS) version 20 for Window (SPSS Inc., Chicago, IL, USA). Descriptive analysis was done by using frequencies and percentages. Odds Ratios with corresponding 95% Confidence intervals (CI) are presented and a p value of less or equal to 0.05 was considered statistically significant. Multivariate logistic regression analysis was used to examine independent factors associated with non-adherence.

Table 1. Demographic characteristics of 179 HCWs

Variables	n(%)
Age	
<25	43(24)
26-35	72(40.2)
>35	64(35.8)
Cadre	
Enrolled nurse*	87(48.6)
Nurse officer*	63(35.2)
Clinical officer	29(16.2)
Work place	
Health centre	67 (37.4)
Dispensary	112(62.6)
Work experience	
<2 years	36(20.1)
2-5 years	54(30.2)
>5 years	89(49.7)
Received on job training on use of NMTG	
Yes	59(33)
No	120(67)

* In Tanzania there is no differentiation between nurses and midwives

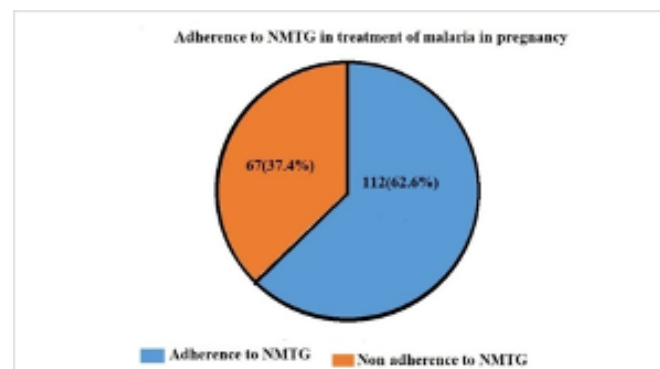


Figure 1. Adherence and non-adherence to NMTG

Results

One third 72 (40.2%) of the participants were aged 26-35 years. Almost half were enrolled nurses 87(48.6%); 112 (62.6%) were working in a dispensary; 89 (49.7%) had work experience of more than five years and 120 (67%) had no on-job training on NMTG (Table 1).

Figure 1 shows that 112 (62.6%) of participants were adhering to NMTG while 67 (37.4%) were not.

Various factors were significantly associated with non-

Table 2. Factors associated with non-adherence to NMTG in treatment of malaria in pregnancy n= 67 (37.4%)

Variables	n (%)	Chi-square	P value
Age			
<25 years	10(14.9)	5.321	0.069
26-35 years	32(47.8)		
>35 years	25(37.3)		
Cadre			
Enrolled nurse	38(56.7)	3.523	0.172
Nurse officer	20(29.9)		
Clinical officer	9(13.4)		
Work experience			
<2 years	14(20.9)	10.307	0.005
2-5 years	23(34.3)		
>5 years	30(44.8)		
Received on job training on use of NMTG			
Yes	11(16.4)	1.226	0.186
No	56(83.6)		
Clients overload			
Yes	45(67.2)	14.748	0.000
No	22(32.8)		
Inadequate supply of Diagnostic test (RDTs)			
Yes	41(61.2)	9.049	0.003
No	26(38.8)		
Inadequate supply of malaria drugs (ACT)			
Yes	36(53.7)	11.031	0.000
No	31(46.3)		

adherence to NMTG in the treatment of malaria in pregnancy. They included client overload per health worker ($\chi^2=14.748$, $p=0.000$), inadequate supply of diagnostic tools ($\chi^2=9.049$, $p=0.003$), inadequate supply of malaria drugs (ACT) ($\chi^2=11.031$, $p=0.000$), and experience of more than 5 years ($\chi^2=10.307$, $p=0.005$) (Table 2).

After controlling for potential confounders, factors which were associated with non-adherence to NMTG included client overload (AOR=3.025; 95%CI 1.136-7.162; $p=0.009$) and inadequate supply of RDTs (AOR=3.15; 95% CI 1.14-9.559; $p=0.000$).

Discussion

In this study 37.4% of participants were not adhering to NMTG during the treatment of malaria in pregnancy; the various factors associated with this prevalence are client overload and an inadequate supply of RDT. Due to

patient overload the HCWs use only clinical assessments to confirm malaria and prescribe anti-malarial drugs without a blood test. This finding is similar to that of the study in the Kamuli district of Uganda to determine the factors affecting adherence to national malaria treatment guidelines among public healthcare workers. This study found that the health practitioners always confirm malaria without performing malaria diagnostic test by RDTs or blood smear when patients present with fever.^[6] The same study noted that the provision of malaria RDTs could play a great role in reducing the persistent problem of malaria misdiagnosis and reduced risk of malaria under-treatment.^[6]

Inadequate supplies of RDTs are due to budget constraints in most of the health centres and dispensaries; this finding is also similar to that of a study in the Kibaha district of Tanzania where stock-outs of RDTs and staff shortages accounted for the low testing rate of patients.^[9] The lack

Table 3. Multivariate logistic regression table on factors associated with non-adherence to NMTG

Variable	Non adherence n(%)	AOR	95%CI	P value
Clients overload				
Yes	45(67.2)	3.025	1.136-7.162	0.009
No	22(32.8)	1		
Work experience				
<2 years	14(20.9)	1		
2-5 years	23(34.3)	0.451	0.054-4.629	0.472
>5 years	30(44.8)	0.086	0.020-0.910	0.387
Inadequate supply of diagnostic tests (RDTs)				
Yes	41(61.2)	3.15	2.14-9.559	0.000
No	26(38.8)	1		
Inadequate supply of malaria treatment drugs (ACT)				
Yes	36(53.7)	3.073	0.149-8.275	0.315
No	31(46.3)	1.197	1.075-1.518	0.117

of association of other factors such as age of HCWs, work experience, lack of on-job training and level of education is consistent with other studies on this subject.^[6,10] However, it is contrary to the study which was done to explore malaria diagnosis and treatment practices following introduction of rapid diagnostic tests in Kibaha District, Coast Region, Tanzania. This noted work experience and on-job training influences the adherence to NMTG.^[9]

Work experience and receiving on-job training in this study are not associated with non-adherence to NMTG. The reason may be due to the fact that many HCWs were trained in the use of NMTG at college. At least 55% of HCWs have work experience of under five years, which indicates that they completed their college studies after the introduction of NMTG which was last updated in 2014.^[8] Conversely, the on-job training may have been of inadequate quality in terms of practice; also, there may have been too few trained HCWs to show a difference in impact.

This finding, however, concurs with that of a Ugandan study which found that HCWs who had been providing services for a shorter period were more likely to conform to the malaria treatment policy than those who had been providing services for longer period.^[11] Similarly, in a study that was conducted in Kenya on health worker performance demonstrated that in-job training alone is not enough to improve performance in the prescribing of drugs; the study recommended supervision and post-training follow-up to improve clinical practice.^[12]

Conclusion

Generally, 37.5% of HCWs are not adhering to NMTG

in the management of malaria in pregnancy. The factors associated with non-adherence to NMTG are client overload and inadequate supplies of RDTs in the health facilities.

We recommend that the government and stakeholders note that emphasizing only IPTp uptake during pregnancy cannot eliminate the poor birth outcomes related to malaria infections; elimination of malaria strategies should also put emphasis on adherence to standard malaria diagnosis and treatment guidelines as one of the key components of malaria prevention and control strategies. Increasing fund allocation to the dispensaries and health centres to employ staff and procure RDTs is also recommended.

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