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COMPLIANCE OF DOCTORS AND MEDICAL ASSISTANTS TO THE NATIONAL PROTOCOL FOR THE TREATMENT OF MALARIA, WAD MEDANI TOWN, GEZIRA STATE

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ABSTRACT

Across sectional study to assess the compliance of health workers to the national protocol for the treatment of malaria was conducted in Wad Medani town, (Gezira state) central Sudan. The protocol is a set of recommendations for a unified treatment. The main objectives were to assess the training, knowledge. Attitude and Practices (KAP) of the health providers towards the protocol and to determine different regimens used by them. 126 health workers were interviewed and their prescriptions were reviewed. The study revealed that the vast majority of the health workers (79%) were not trained in the protocol guidelines. Although 93.7% were aware about it, and (90.5%) were adherent to the 1st line of the protocol in the treatment of uncomplicated malaria, only 49.2% were adherent to the 2nd line treatment. In case of severe malaria most of the health workers were found to be not adherent to the protocol guideline 82.2%.The vast majority of the health workers believed that the new antimalarial drugs were effective 84.7% but 79.4% thought that it is costy. Out of the 1471 prescriptions (22.1%) were for antimalarial treatment the majority of them were written by Medical Officers. The most common antimalarial used was artemether (51.1%). Regarding the parentral artemether 14.2% was prescribed in smaller dose. However about 81.2% of antimalarial drugs prescription for simple malaria was judged to be adquate and conforming with the protocol.

Key words: Protocol – adherence – compliance – training.

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الخلاصـة

هذه دراســة مقطعية عن إلتزام مقدمي الخدمة بالبروتوكول القومي لمعالجة الملا ريا. أجريت الدراســة في مدينة ود مدني .البروتوكول هو مجموع من الموجهات لمعالجة موحدة.

كانت الأهداف الرئيسية للدارسة هي تقييم تدريب ومعارف واتجاهات وممارسات مقدمي الخدمة الصحية تجاه البروتوكول وتحديد مختلف الوصفات التي يستخدمونها.

أجريت مقابلات فردية 126من مقدمي الخدمة وتمت معاينة الوصفات التي كتبت بواسطتهم.

أوضـــحت الدراســـة أن الغالبية غير مدربين في موجهات البروتوكول (79%) ولكن (93.7%) منهم يعلمون عن البروتوكول. حوالي 90.50% منهم ملتزمين بالبروتوكول في معالجة الملا ريا البسيطة ولكن 49.2% فقط ملتزمون به في خط العلاج الثاني ، كما أنهم غير ملتزمون به في حالة الملا ريا الوخيمة 82.2%. الغالبية العظمى يؤمنون بفعالية البروتوكول 84.7 , كما يعتقد نسبة 79.4 % أنه عالي التكلفة. تمت مراجعة 1471 كانت نسـبة وصـفات الملا ريا بها 22.1% ، الغالبية وصـفت بواسـطة أطباء عموميين أكثر العلاجات استخداماً هي الآرثميثر (51.1%) ولكن في 14.2% وصفت بجرعة أقل . الغالبية العظمى من وصفات الملا ريا البسيطة 81.4 وجدت مطابقة للبروتوكول .

INTRODUCTION

Malaria remains one of the most pressing health problems in the world. Malaria exists in 100 countries but mainly confined to poorer tropical areas of Africa, Asia and Latin America. More than 90% of malaria cases and the great majority of malaria deaths occur in tropical Africa. Plasmodium Falciparum is a main cause of severe clinical malaria and deaths (1).

There are at least 300–500 millions acute cases of malaria each year globally, resulting in more than a million deaths. Around 90% of these deaths occur in Africa (2).

Malaria in Sudan is a major public health problem. It leads to 7.5 million cases and 35.000 deaths every year (3).

Several drugs efficacy studies were conducted over the past few years. The overall results showed an ever increasing level of Chloroquine (CQ) resistance. The national malaria control programme (NMCP) has also carried efficacy studies in 4 sentinel sites (Madeni, Obeid, Damazin and Kosti) during 2002 season.

The obtained results showed that CQ failure ranges from 32-42% (NMCP 2002). Further studies conducted in the southern Sudan, have more than 70% treatment failure (4).

Resistance to sulfadoxine pyrimethamine (SP) fortunately enough as showed by many studies carried, have shown low level ranging from 1.3% to 5% (5). A study of antimalarial drug prescribing patterns was carried out in Wad Medani town in Gezira state before the implementation of the protocol in 1999(3). The study showed poor standards of prescribing of antimalarial drugs, in terms of over-prescribing of Chloroquine tablets and incorrect regimens for intravenous administration of quinine. The same study revealed that most of the medical practitioners tended to follow their own regimens to treat malaria infection (6).

Another study had been implemented in the same area in (2001) to assess the implementation of the previous protocol. The study revealed, lack of training and supervision among the health provider-negative attitudes of the doctors towards the protocol with inadequacy of the doses and different regimens not conforming with the protocol (7).

The National Malaria Control Programme had endorsed a new protocol in the year (2004) (4).

The national protocol is a set of recommendations and regulations concerning antimalarial drugs and their utilization in a country. In this version of the protocol, the most important change in malaria management is shifting from **monotherapy** to **combination** therapy using **Artemisinin-based combination** therapy **(ACT)** as first and second line treatment.

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JUSTIFICATION

In spite of development of malaria diagnosis and treatment technique and control programs that are made by WHO and government (Directorate of Malaria-Federal Ministry of Health) to reduce malaria morbidity and mortality, still there is increase in malaria cases in Sudan. Malaria is not a difficult disease to be managed if early diagnosed and promptly treated. However, delay in treatment will lead to grave outcome. Early diagnosis and prompt treatment is the cornerstone in the global strategy of malaria control and should be a fundamental right of all population at risk (8).

The implementation of any treatment protocol should be assessed in order to determine the efficacy of the drugs.

OBJECTIVES

General objectives:

- To evaluate the implementation of the guidelines of the national, protocol in Gezira State.

Specific objectives:

1- To identify the training status of the health provider in the protocol guidelines.
2- To assess the knowledge, attitudes and practices of health-providers towards the national protocol for the treatment of malaria.
3- To determine the adherence of the health workers (doctors medical assistants) to the guidelines of the national protocol for treatment of malaria.
4- To identify unintended consequences or constraints in implementation of the protocol for treatment of malaria.

METHODS

This cross-sectional study was implemented in Wad Medani town, Gezira State, which is considered one of the large states in Sudan, with an area of 35.304 km2 and a population of 4 millions[9].

Wad Medani town is the capital of the state. The study was conducted in two parts. The first was interview with the health providers in the town, working in the hospitals and health centers. A sample of 10% (126) out of (1260) health workers was selected. Those were divided to the 5 categories of health workers (specialists medical officers, house officers, registrar and medical assistants) according to their relative size. Adherence to the protocol was checked by asking the health workers what type of malaria treatment they use as 1st line, 2nd line and 3rd line respectively. Also by asking them about regimens they used for treating different types of malaria, then the answers were compared to the standard regimens recommended by the National protocol.

The second part was review of the prescription written by the health providers from public, private and health insurance pharmacies.

Three Pharmacies were selected randomly from the 3 strata. The prescriptions were collected using a period prevalence for 3 consecutive days (1471 prescriptions were reached).

The National Protocol Guidelines: The National Malaria Control Program (NMCP) recommends the use of ACT as it is now the safest and most effective treatment. Following drugs are recommended as 1st, 2nd and 3rd line treatment.

The "first-line treatment" is "*Artesunate plus Sulfadoxine- Pyrimethamine"* in form of tablets.

The second line treatment is (*Artemether-lumefantrine).*

The third-line treatment: *quinine* dihydrochloride, quinine hydrochloride or quinine sulphate orally should be used in case of non response.

RESULTS

The vast majority of health workers were not trained in the protocol guidelines 100 (79.4%), but the categories of the registrars were completely neglected 16 (100%). The other categories namely the house officers, Medical officers, consultants and medical-assistants showed the respective rate of not attaining

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any sort of training in the guideline of national protocol for treatment of malaria 22 (95.7%), 38(72%) and 6(60%). The difference on the training status was significant table (1).

With regard to the level of awareness of the protocol table (2) showed that, most of the health workers. 118(93.6%) were found to be aware. The medical assistants showed the lowest level of awareness 7(70%). The difference in the level of awareness was significant.

Regarding the level of adherence to the protocol in the treatment of uncomplicated malaria (1st line treatment), most of the health workers were found to be adherent to the protocol. The medical assistants (50%) and house officers (43.75%) showed lower level of adherence to the protocol. Significant difference was observed in adherence for the protocol for different categories. Table (3).

Despite the relative high rate of awareness among the studied group, more than half of the interviewed health workers 64 (50.8%) showed non adherence to the protocol, in the 2nd line treatment. There was significant difference between the different categories. Table (4).

Regarding the level of adherence to the protocol in the treatment of severe malaria most of the health workers were found to be not adherent to the protocol. The house officers and medical assistants showed lower level of adherence with significant difference. (Table 5).

When the health workers were enquired about the different lines of the protocol, their correct knowledge was as follows 90.5% of them recognize the 1st line 49.2%, 2nd line, while only 19.8% of health workers had knowledge the 3rd line.

Regarding the opinion of health workers about the protocol 48.7% thought it is effective, 79.4% said the drugs are costy (Fig. 1).

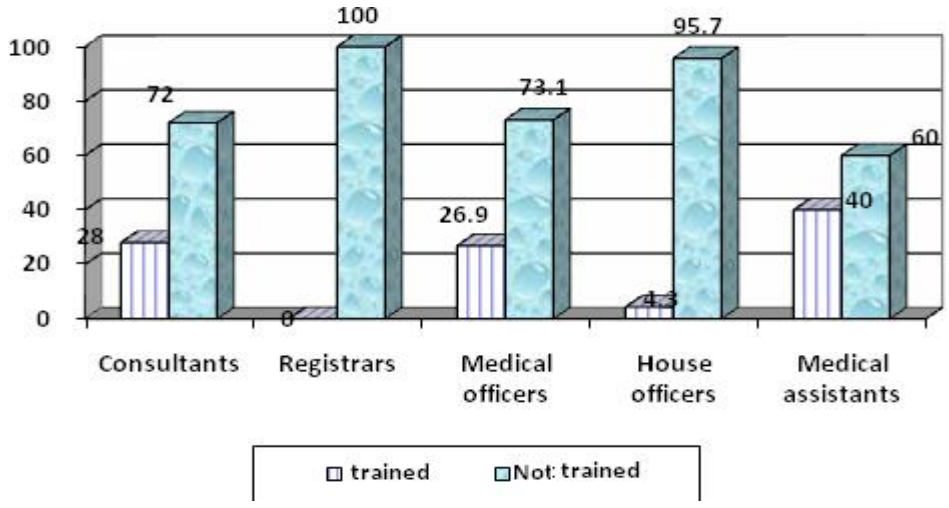
The majority of health workers received a copy of protocol guidelines after training, 96.2% while only (15.4%) were having it in their clinics at the time of the survey (Fig. 2). Supervision after training was poor, only 16.4% admitted that they were supervised after training.

Prescription analysis: Out of 1471 prescriptions, 325 were for antimalarial drugs (22.1%). Most (259, 79.7%) were written by Medical Officers, (51, 15.7%) by consultants and (15, 4.6%) by medical assistants. (264, 81.2%) of antimalarial drugs prescriptions were judged to be adequate & conforming with the protocol. Differences were observed between different specialties regarding correct dosage.

81.8% of prescriptions from G.P followed the protocol, 66.8% from medical assistants and 82.4% from consultants.

The most common antimalarial drug used was artemether (166, 51.1%) but in some the prescription (46, 14.2%) was prescribed in smaller dose, (6 injections instead of 8).

Figure (1): Training of health workers in the guidelines of the National Protocol for treatment of malaria.



$\chi^2 = 12.259$ P.value = 0.016 about 79% were not trained

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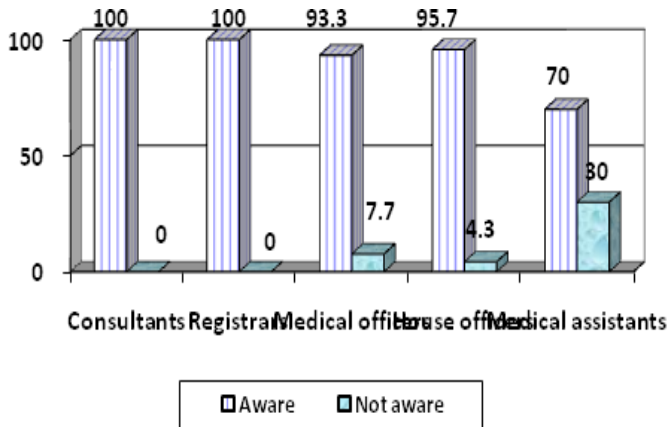
Figure (2): Awareness of health workers about the National protocol for treatment of Malaria.



χ^2 = 18.838 P.value = 0.001

Figure (3): Adherence of health workers to the Protocol in the treatment of uncomplicated malaria (simple malaria) on the 1st line of treatment.

χ^2 = 49.596 P.value = 0.000

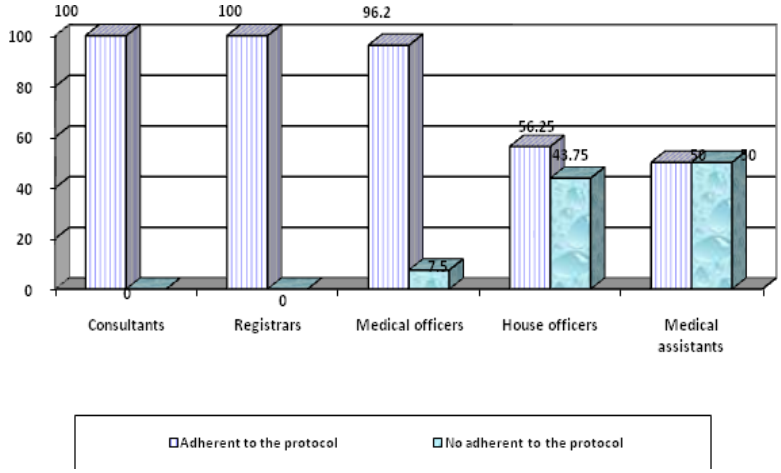


Figure (4): Adherence of health workers to the Protocol in the treatment of uncomplicated malaria (simple malaria) on the 2nd line treatment.

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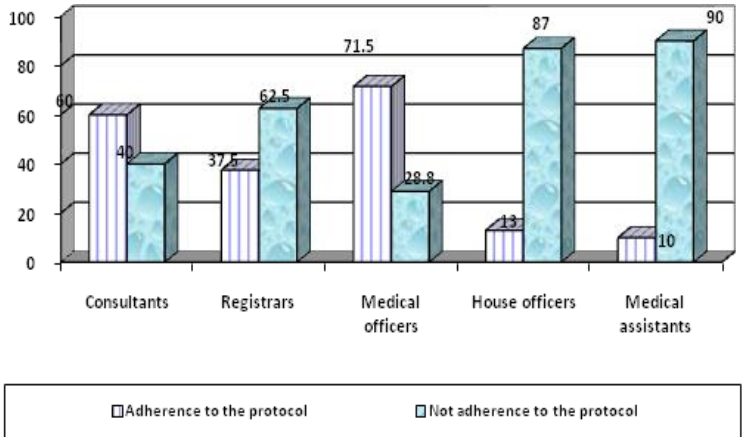
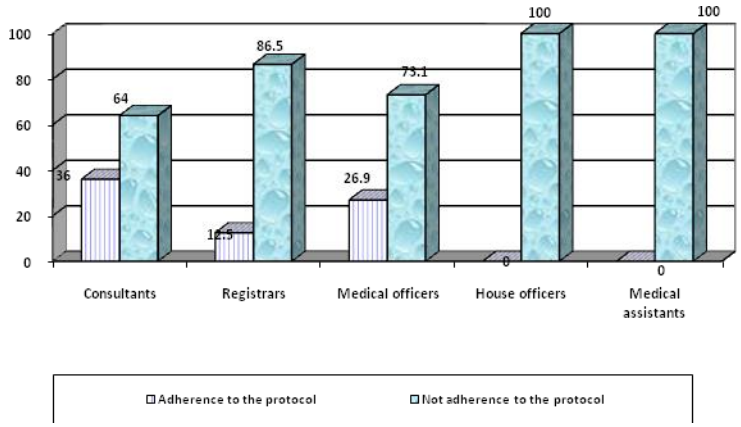


$\chi^2 = 70.258$ P.value = 0.000

Figure (5): Adherence of the health workers to the Protocol in the treatment of severe malaria.



$\chi^2 = 8.720$ P.value = 0.013

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Figure (6): Opinion of the health workers about the effectiveness and cost of the new antimalarial drugs in the Protocol.

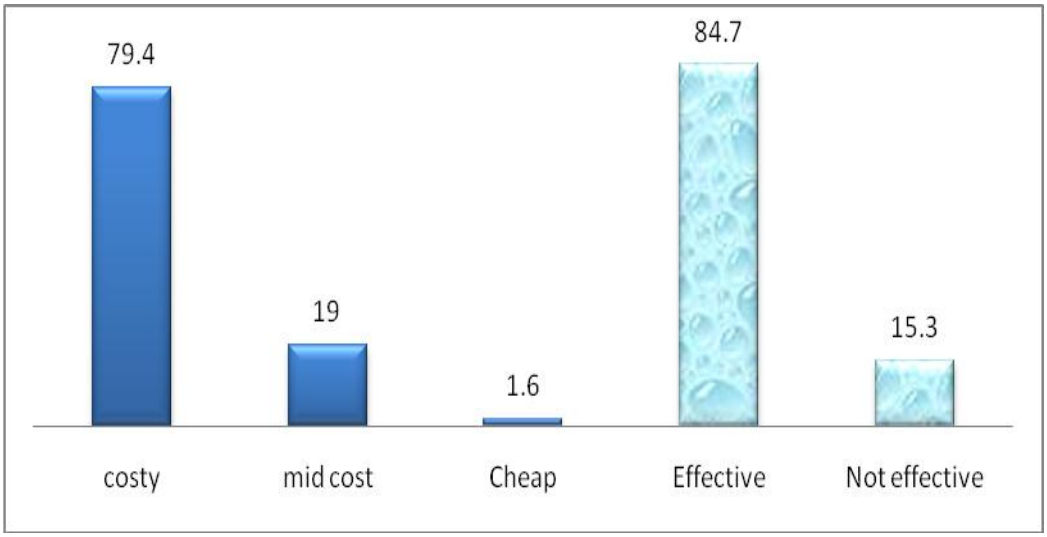

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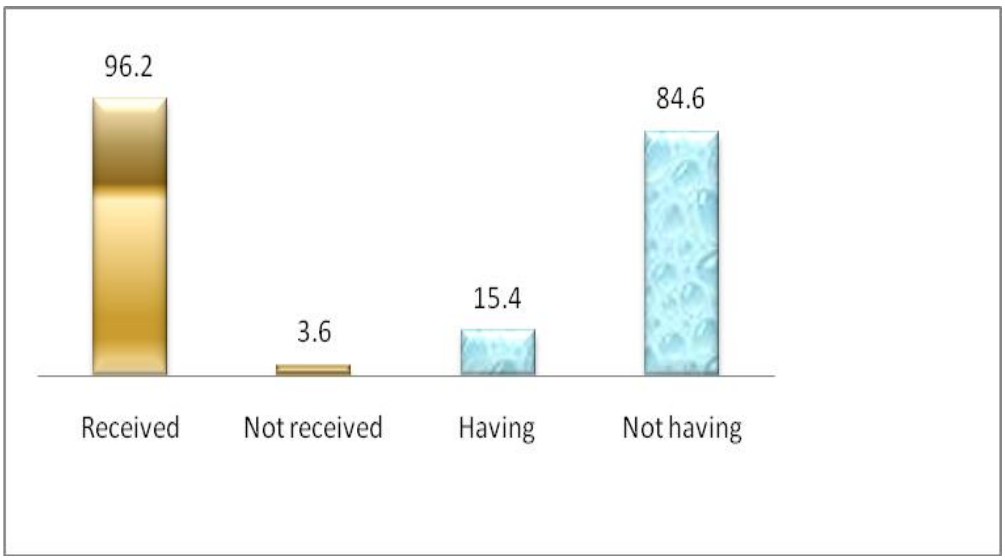
Figure (7): Health workers who received the guidelines of the Protocol after training and those having it at their clinics



DISCUSSION

Proper planning is the corner stone in successful implementation of any strategy such as implementing new treatment protocols.

Training is the most important element in applying the new approaches in our study , 79.4% of the health providers were not trained in the guidelines of the new protocol as shown in table (1) another two studies had been conducted in (1966, 2001) in the state in 2001 both highlighted the importance of training as an element of success (6-7).

Despite the lack of training in the protocol guidelines we noticed high level of awareness about the protocol especially in the 4 categories of doctors; this can be attributed to their own interest and learning. However, the standard of medical assistants awareness was only 70%. This group is a very important group in the treatment of malaria especially in the rural areas (7). They should be targeted in training and supervision to ensure their compliance to the protocol.

The lack of training was reflected on the adherence to the guidelines (table 3) in the 1st line specially the categories of house officers and medical assistants and the latter were the worst. That is similar to the previous study which was conducted in (2001) (7).

This necessitates reinforcement of pre and in-service training in these two categories.

It seems that the 2nd line treatment had a problem where we find more than half of the health providers were not adherent to it and again the worst were the house officers and medical assistants. This treatment (artemether – Lamefantrine) is a highly effective (Fixed dose combination) treatment with high clinical and parasitological cure rate and rapid gametocyte clearance. As yet no serious side effect.(4). These facts should be stressed to ensure adherence of health workers in case of non response or treatment failure with the 1st line treatment.

Regarding the treatment of severe malaria the study showed high levels of non adherence to the protocol in all categories and again the non adherence was more in the categories of house officers and medical assistants almost 100% of them were not adherence to it. The house officers are the main providers in the hospitals where severe malaria is usually managed.

The analysis of the prescriptions revealed that the majority of prescriptions (81.8%) were written by Medical officers, thus highlighting the importance of targeting them in future interventions. We noticed the absence of prescriptions written by house officers in the collect prescriptions. This is because they are providing the service mainly in hospitals. Artemether was the most commonly prescribed antimalarial drug (51.1%). Chloroquine is still used in the Sudan (36%). Warrel observed that despite the extensive spread of

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P.Falciparum resistant strains, Chloroquine is still widely used antimalarial drug in world (10), as it is readily available and comparative by cheap (11). We noticed also that quinine did not appear in the prescription. This can be explained by the fact that severe malaria is usually treated as in patients.
Parentral treatment is frequently prescribed more than the oral treatments which are not recommended to be used as first and second lines of treatment. Although the uncomplicated malaria occurs more frequently than the complicated malaria, the artemether (2^{nd} line) is used more frequently (51%) than the 1^{st} line.
The proportion of antimalarial drugs prescriptions that were comforming with the protocol (81.2%) in terms of dose compared to (79.7%) in the previous study in (2001) (7).

CONCLUSION

The study concluded that the majority of the health workers were not trained in the protocol guideline together with lack of supervision after training.

- The health workers were more adherent to the protocol in the 1^{st} line treatment but there is unnecessary use of parentral route.
- Negative attitude of health workers towards 2^{nd} line of the protocol.
- The majority of the prescriptions were conforming to the protocol in the treatment of simple malaria.

RECOMMONDATIONS

We recommend the following:-

1. Continuous monitoring and updating of protocol to any resistance to these drugs may be developed in the future.
2. Introducing the Protocol guidelines in the preservices training.
3. Reinforcement of the training especially among the house officers and medical assistants.
4. Supervision after training.

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