ADHERENCE OF MEDICAL PRACTITIONERS TO THE NATIONAL MALARIA PROTOCOL AMONG PRIMARY HEALTH CARE CENTERS IN KHARTOUM LOCALITY

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ABSTRACT

Introduction: Very few studies have dealt with the issue of compliance and adherence to the National Malaria Protocol (NMP) in Khartoum locality. Irrational use of anti-malarial drugs by medical practitioners (MPs) and pharmacists was shown in various practices e.g. over prescribing and Over-The-Counter (OTC) dispensing.

Methods: A cross-sectional study was conducted on 33 MPs employing a closed questionnaire. Results and Discussion: A 87.9% adherence to the NMP was shown by the MPs for the 1st line treatment of uncomplicated malaria (UM) prescribing Artesunate plus Sulfadoxine-Pyrimethamine tablets, 21.2% for the 2nd line treatment of UM as Artemether plus Lumefantrine, 48.5% for the 3rd line treatment of UM as quinine tabs, 48.5% for the 1st line treatment of severe malaria (SM) as quinine injections, 15.2% for the 2nd line treatment of SM as Artemether injections, 90.9% for the 1st line treatment of UM in children as Artesunate plus Sulfadoxine-Pyrimethamine tabs, 15.2% for the 2nd line treatment of UM in children as artemether plus Lumefantrine, 90.9% for SM in children as quinine injections or artemether injections. 48% of MPs were aware of the NMP by protocol posters. The adherence to the NMP by MPs of different ages and gender showed only significant inter subject differences for the 1st line treatment of UM in children (p-value 0.010 and 0.022) respectively. Doctors with different academic qualifications post MBBS showed only significant differences for the adherences to the 2nd line treatment of SM
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(p-value 0.023) and 1st line treatment of UM (p-value 0.013). Doctors with different professional medical status showed a significant difference for the adherence to the 1st line treatment of UM in children (p-value 0.038). **Conclusion:** MPs are only showing adherence towards the 1st line treatment of NMP in UM in adults and children and SM in children, but not the 2nd and 3rd line treatment of UM in adults, 1st and 2nd line treatments of SM and 2nd line treatment of UM in children. Rational antimalarial therapy could be attained via promotion of an administrative and/or managerial and/or educational intervention(s).

**KEYWORDS:** Adherence, Malaria, National Malaria Protocol, Medical practitioners.

**INRTODUCTION**

Malaria is known to be one of the main leading causes of mortality and morbidity in Sudan. Reported malaria cases accounts for 9.3% of outpatients’ clinic visits and approximately 8.7% of hospital admissions. Disease proportional mortality is 2.6% with an overall country reported case fatality rate of 0.64%, and an annual reported malaria incidence of 357/10,000 population.[1],[2]

Malaria is not a problematic disease, it can be managed if an early diagnosed is made and promptly treated. However, the delay in the treatment could lead to a serious outcome. Early diagnosis and prompt treatment is the cornerstone in the universal strategy of malaria control and should be a fundamental right for all the population at risk.[3] As for the treatment, the situation is alarming. Irrational prescribing of anti-malarial drugs by medical personnel was presented in various practices. The over prescription of injections is prominently common, in addition to the OTC dispensing of all anti-malarial drugs by pharmacists.[3]

The National Malaria Protocol (NMP) chief objective is to deliver standardized guidance to prescribers and users on the appropriate malaria management.

The World Health Organization (WHO) and the Directorate of Malaria at the Sudan Federal Ministry of Health have made great efforts to develop the treatment regimens, malaria diagnosis and control programs, predominantly aiming to reduce the malaria morbidity and mortality. In spite of that the disease occurrence and frequency is still increasing.[2]

The lack of adherence to the National Malaria Protocol has accounted for a significant negative influence on the national health in general. This may lead to unsuccessful treatment
regimens, health risks, patient non-compliance, drug wastage, wasteful of resources and unnecessary expenses. [4],[5]

The employment of any treatment protocol should be monitored in order to evaluate the outcome(s) of the treatment(s).[6] It is also equally significant to evaluate the knowledge, attitudes and practices of health providers regarding the National Malaria Protocol. This evaluation will make it possible to identify the problem areas underlying the poor and/or lack of adherence and in turn develop the suitable corrective measures and relevant effective interventional strategies for the provision of a nationwide rational anti-malarial therapy.[7]

MATERIAL AND METHODS
A cross-sectional questionnaire-based descriptive analytical study, conducted in Khartoum locality health centers (23 centers were employed), focused on medical practitioners (33 medical practitioners were included) who are authorized to prescribe anti-malarial drugs. An ethical consideration was taken as written consents from MOH, Khartoum locality and verbal consents were taken from health centers managers. Data was collected between May 2013 – August 2013 and analyzed for descriptive statistics using SPSS version 16.

RESULTS
For Uncomplicated Malaria treatment in adults according to the National Malaria Protocol it was established that 87.9% of the medical practitioners adhered to the 1st line treatment, 21.2% of them adhered to the 2nd line treatment and 48.5% adhered to the 3rd line treatment shown in Figure 1.

Fig.1. Adherence % to the NMP treatment in uncomplicated Malaria.

For Severe Malaria treatment in adults according to the National Malaria Protocol it was found that 48.5% of the medical practitioners adhered to the 1st line treatment and 15.2% of them adhered to the 2nd line treatment shown in Figure 2.
Fig. 2. Adherence % to the NMP treatment in severe Malaria.

For Uncomplicated Malaria in children 90.9% and 15.2% of the medical practitioners adhered to the 1<sup>st</sup> and 2<sup>nd</sup> lines treatments of the Protocol respectively. Also, 90.9% of the medical practitioners adhered to the Protocol treatment of severe malaria in children shown in Figure 3.

Fig. 3. Adherence to the NMP treatment in uncomplicated and severe Malaria in children.

Table 1. Adherence of Medical Practitioners to the NMP treatments.

<table>
<thead>
<tr>
<th>Treatment Type</th>
<th>Frequency (f*)</th>
<th>Adherence (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1&lt;sup&gt;st&lt;/sup&gt; line UM in Children</td>
<td>30</td>
<td>90.9%</td>
</tr>
<tr>
<td>2&lt;sup&gt;nd&lt;/sup&gt; line UM in Children</td>
<td>5</td>
<td>15.2%</td>
</tr>
<tr>
<td>SM in Children</td>
<td>30</td>
<td>90.9%</td>
</tr>
<tr>
<td>1&lt;sup&gt;st&lt;/sup&gt; line UM</td>
<td>29</td>
<td>87.9%</td>
</tr>
<tr>
<td>2&lt;sup&gt;nd&lt;/sup&gt; line UM</td>
<td>7</td>
<td>21.2%</td>
</tr>
<tr>
<td>3&lt;sup&gt;rd&lt;/sup&gt; line UM</td>
<td>16</td>
<td>48.5%</td>
</tr>
<tr>
<td>1&lt;sup&gt;st&lt;/sup&gt; line SM</td>
<td>16</td>
<td>48.5%</td>
</tr>
<tr>
<td>2&lt;sup&gt;nd&lt;/sup&gt; line SM</td>
<td>5</td>
<td>15.2%</td>
</tr>
</tbody>
</table>

*NMP: National Malaria Protocol; UM: Uncomplicated Malaria; SM: Severe Malaria; f*: frequency.
Regarding the awareness of medical practitioners of the NMP treatments, 48.5% of them obtained their knowledge from the Federal MOH posters, 24.2% from colleagues, 21.2% from MOH workshops and 6.1% by self-education.

The association between practice of the National Malaria Protocol and gender of the medical practitioners was significant regarding the training on the national malaria protocol (p-value 0.017), the adherence to the 1st line treatment of Uncomplicated Malaria in children (p-value 0.022) and the opinion of the effectiveness of it (p-value 0.031).

The association between practice of the National Malaria Protocol and the qualification of the medical practitioners, was significant regarding the adherence to the 2nd line treatment of Severe Malaria (p-value 0.023) and the adherence to the 1st line treatment of Uncomplicated Malaria (p-value 0.013), the association between medical practitioners’ professional position was significant regarding the opinion of the effectiveness of the National Malaria Protocol (p-value 0.000), the adherence to the 1st line treatment of Uncomplicated Malaria in children (p-value 0.038), receiving a copy of the protocol after the training (p-value 0.047) and having training on the National Malaria Protocol (p-value 0.017).

The association between awareness of National Malaria Protocol and practice of the National Malaria Protocol was not significant (p-values > 0.05).

The association between following of National Malaria Protocol and the real practice of the medical practitioners was significant regarding having the National Malaria Protocol at the time of the study (p-value 0.010).

**DISCUSSION**

In our study we found that majority of the medical practitioners interviewed had not been trained in the protocol. This is might be due to lack of the Ministry of Health toward the close supervision. While a study to assess the impact of the National Protocol for malaria treatment conducted in a town in Gezira state, central Sudan, in 2001 most of doctors and medical assistants interviewed had not been trained in the protocol and about half of participants were still using their own protocols. The study showed a lack of continuous supervision, training and follow up in the protocol guidelines as well as negative attitudes of hospital specialists towards the protocol. However in another 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 study revealed that the vast majority of the health workers were not trained in the protocol guidelines.\cite{9}

We found that vast majority of participants were aware of the National Malaria Protocol, and most of them adhered to the 1\textsuperscript{st} line treatment of uncomplicated malaria of the National Malaria Protocol, only few adhered to the 2\textsuperscript{nd} line treatment. In case of severe malaria, we found that about half of the medical practitioners adhered to the 1\textsuperscript{st} line treatment of severe malaria, only few adhered to the 2\textsuperscript{nd} line treatment of severe malaria. The vast majority of the medical practitioners believed that the National Malaria Protocol was effective, but a few thought it is costly. While, in a 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, vast majority were aware of it and most of them were adherent to the 1\textsuperscript{st} line treatment of the protocol in the treatment of uncomplicated malaria and only about half were adherent to the 2\textsuperscript{nd} line treatment. In case of severe malaria most of the health workers did not adhere to the protocol guideline. The vast majority of the health workers believed that the new anti-malarial drugs were effective.

**CONCLUSION**

The adherence to the National Malaria Protocol for the 1\textsuperscript{st} line treatment of Uncomplicated Malaria, 1\textsuperscript{st} line UM malaria in children and for severe malaria in children are good, for the 2\textsuperscript{nd} line and the 3\textsuperscript{rd} line, the 1\textsuperscript{st} line treatment of Severe Malaria, 2\textsuperscript{nd} line treatment and the 2\textsuperscript{nd} line UM in children are poor.

The sources of awareness of National Malaria Protocol were mostly from posters the association between practice of the National Malaria Protocol and the age of the medical practitioners was significant regarding the adherence to the 1\textsuperscript{st} line treatment of Uncomplicated Malaria in children.

**RECOMMENDATION**

Based on the current study there is an urgent need for further studies to deal with:

- Large study populations.
- Greater number of MOH health centres and hospitals and private health centres and clinics from various socioeconomic and/or different geographical locations.
- An interventional study administrative, managerial and/or educational to develop appropriate measures corrects the adherence to the National Malaria Protocol.
• There is paramount for the posters, lectures, workshops and journal clubs to encourage the adherence of medical practitioners to the National Malaria Protocol.

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