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A study on antimalarial prescription pattern in rural tertiary care teaching hospital

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Abstract
The study concludes that males were more infected by malaria than female patients. The incidence was more in the age group between 18-35 years than in older adults and elder patients. All the cases with negative parasite test are considered as 'clinical malaria', they were treated empirically and positive cases were given specific treatment. There is no hospital guideline for the treatment of malaria, physicians followed their own protocol to treat malaria. Most of them followed WHO guideline than National guidelines. The most commonly used antimalarial was found to be Artesunate, followed by Artesunate + Mefloquine and CQ. Total antibiotic used in 112 patients was 182 among them (51.6%) Ceftriaxone was used in 84.7% patients followed by Doxycycline (13.2%) in 21.6% of patients. It was noted that monotherapy was most preferred than combination therapy. The incidence of ADR in our study was found to be less. Out of 14 ADRs physician accepted in 10 ADRs and necessary action for the management was taken after clinical pharmacist recommendation. In our study we found that, there was no proper diagnosis of malaria parasite which leads to improper use of antimalarials. This can cause miss-use of antimalarials and antibiotics which will be the main cause of ADRs and emergence of drug resistance.

Keywords: Anti-malarial, combination therapy, prescription, mefloquine, WHO

Introduction
Chemotherapy has an important role in treatment and control of malaria. It is very much important to diagnose the type of plasmodium species before the commencement of the treatment, then only specific and effective drug can be chosen and drug resistance can be prevented. Quinoline and 4-aminoquinolines class of drugs have been safer and effective of which chloroquine (CQ) has been used from ancient period which is cheap, effective, safe and commonly available drug in the treatment of P. vivax infection which was introduced in year late 1950s. Along with this drug Amodiaquine (AQ), Sulfadoxine/ Pyrimethamine (SP); Sulfaline/ Pyrimethamine, Mefloquine, Halofantrine, Quinine, Atovaquone/ Proguanil, Primaquine artemisinin derivatives like artemether, artesunate and arteetherare the single agent therapy along with this fixed dose combination drugs are also available like Mefloquine + Artesunate, Sulfadoxine + Pyrimethamine + Artesunate, Lumefantrine + Artemether. These drugs have their own mode of action, active against specific parasite and also specific side effects which limit their use in the therapy.
The combination therapy can increase effectiveness of available antimalarial drug, gets synergetic or additive potential of two or more drugs 8 and delay the emergence of spread of drug resistance comparatively to monotherapy. Incidence of resistance strains of the parasite can be minimized by using two or more drug with independent mechanism of action, since it is believed that mutation that confer resistance to each drug will co-exist in the same parasite.

Methodology
Study Site
This study was conducted at Adichunchanagiri Hospital and Research Center (AH&RC), B.G. Nagara. It is a 1050 bedded tertiary care teaching hospital having emergency department, ICCU, ICU, PICU and different specialties like medicine, surgery, orthopedics, obstetrics and gynecology. Approximately from all departments 200-250 patients are being treated every day. This hospital provides specialized health care services to the rural population in and around B.G. Nagara.

Study design
This was a prospective and observational study.

Study period
The study was conducted over a period of 9 months.

Study criteria
Inclusion criteria
All in-patients of general medicine who have prescribed with antimalarials and willing to participate in the study.
Patients of above 18 years and of either sex admitted in the general medicine department.

Exclusion criteria
Pregnant/lactating women.

Materials used
Patient profile form.
Specially designed data collection form.
Patient consent form.

Source of data

Demographic details of the patient was obtained from the patient case records, medication charts and laboratory data reports and other relevant source.

Study procedure

Patients who satisfied the inclusion criteria were enrolled after taking their written consent (ANNEXURE IV). The drug therapy of enrolled patients were routinely monitored, interviewed whenever necessary and discussed with the physician regarding therapy. Their specific demographic details (name, age, gender, and address), past medical history, laboratory investigations and other relevant details were collected in a specially designed 'Data Collection Form' (ANNEXURE II) and analysed.

The analysis of prescribed antimalarials, antibiotics used were carried out by using standard sources like articles, journals, Micromedex, CIMS and other relevant sources. Severity of ADRs were assessed using NARANJO's causality assessment scale.

Research and ethical committee approval

The Study was approved by the Institutional research and ethical committee of AH &RC, B.G. Nagara.

Statistical methods

Data was analyzed for frequency and percentage by descriptive statistical analysis using IBM SPSS 20 software.

Results and discussion

A total of 112 patients were enrolled into the study in which 68(60.7%) were male patients and 44(39.3%) were female patients.

Table 1: Gender and age wise distribution

Demographics	Category	No. Of patients (%)
Gender	Male	68(60.7)
	Female	44(39.3)
Age	18-35	51(45.5)
	36-55	37(33.0)
	>55	24(21.4)

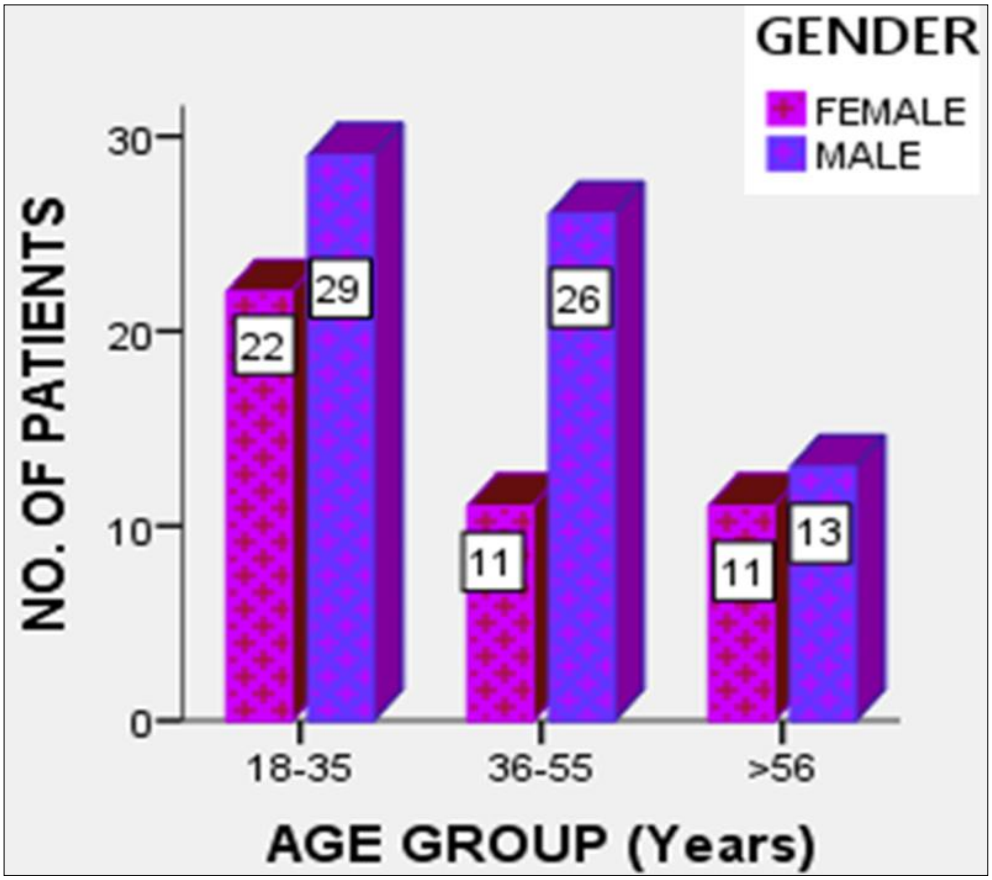

Fig 1: Gender and age wise distribution in the study population

Table 2: Distribution of type of malarial cases

Type of malaria	No. Of patients (%)
Clinical malaria	85(75.9)
P. vivax	25(22.3)
P. falciparum	2(1.8)
Total	112(100.0)

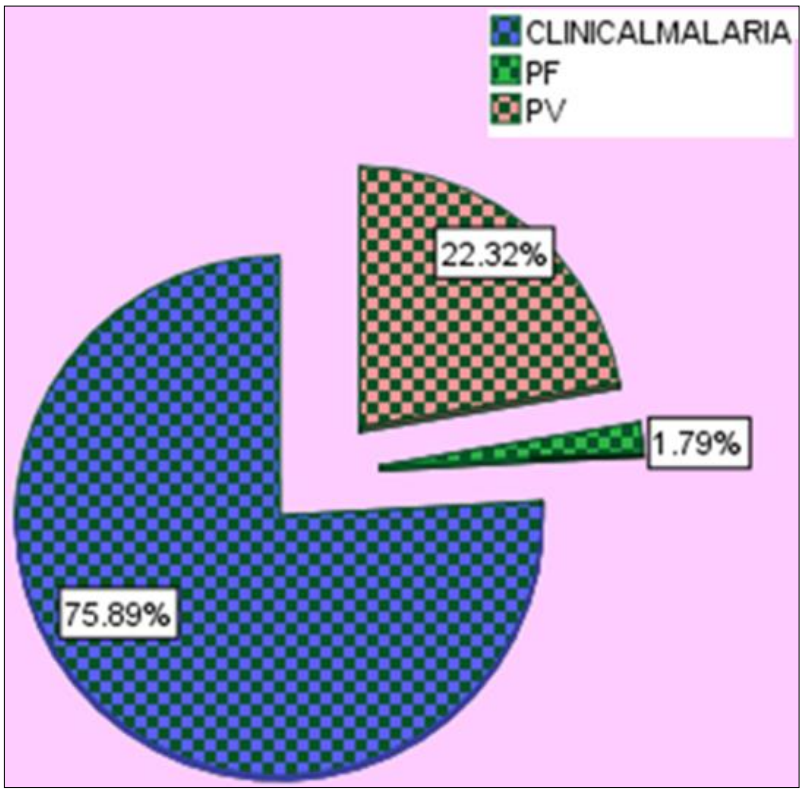

Fig 2: Types of malaria in the study population.

Table 3: Pattern of antimalarials used in malaria

Antimalarial used	Type of malaria			Total no. Of patients (%)
	P. vivax	P. falciparum	Clinical Malaria	
Artesunate	11	1	29	41 (36.6)
Artesunate+mefloquine	6	1	27	34 (30.4)
Artesunate+sp	2	0	9	11 (9.8)
Chloroquine	2	0	16	18 (16.1)
Artesunate & primaquine	2	0	1	3 (2.7)
Artesunate+sp&primaquine	1	0	1	2 (1.8)
Artesunate+mefloquine				
	0	0	1	1 (0.9)
&chloroquine				
Artesunate&chloroquine	1	0	1	2 (1.8)
Total	25	2	85	112 (100)

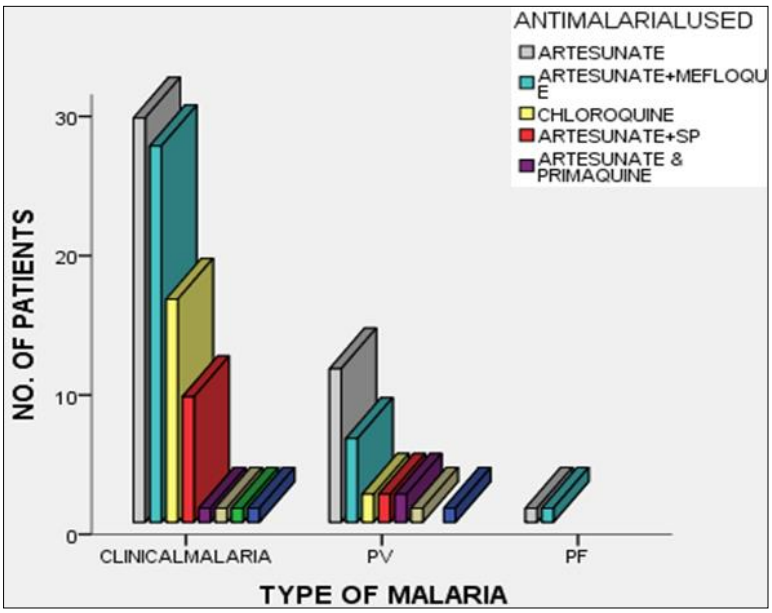

Fig 3: Represents commonly used antimalarials in malaria.

Table 4: Frequency of antibiotics used in malaria

Antibiotic	Clinical malaria	P. vivax	P. falciparum
Ceftriaxone	74	18	2
Cefoperazone+Salbactum	2	0	0
Nitrofurantoin	5	1	0
Cefixime	2	0	0
Levofloxacin	4	1	0
Cefpodoxime	1	0	0
Piperacillint+Azobactum	17	3	0
Amikacin	3	3	0
Doxycycline	18	6	0
Ceftriaxone+Salbactum	6	3	0
Azitromycin	3	1	0
Norfloxacin	2	0	0
Ofloxacin+Ornidazole	2	0	0
Ciprofloxacin	2	1	0
Ampicillin	1	0	0
Meropenum	1	0	0
Cefotaxime	1	1	0

Table 5: Details of types of therapy

Therapy	Clinical Malaria	P. vivax	P. falciparum	Total no. of patients
Monotherapy	46	16	1	63 (56.2%)
Combination therapy	39	9	1	49 (43.8%)
Total % with in type of malaria	75.9%	22.3%	1.8%	112 (100%)

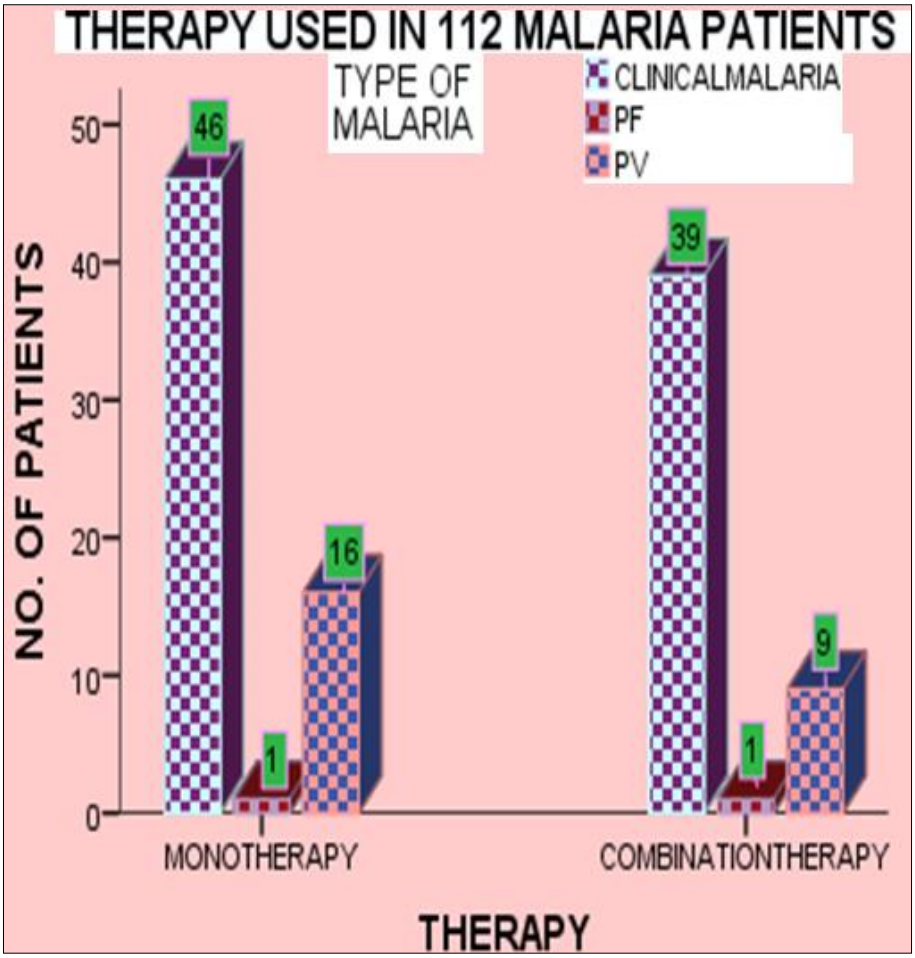

Fig 4: Represents details of types of therapy

Table 6: Details of treatment in enrolled populations

Treatment	No. Of patients (%)
Empirical	85(75.9)
Specific	27(24.1)

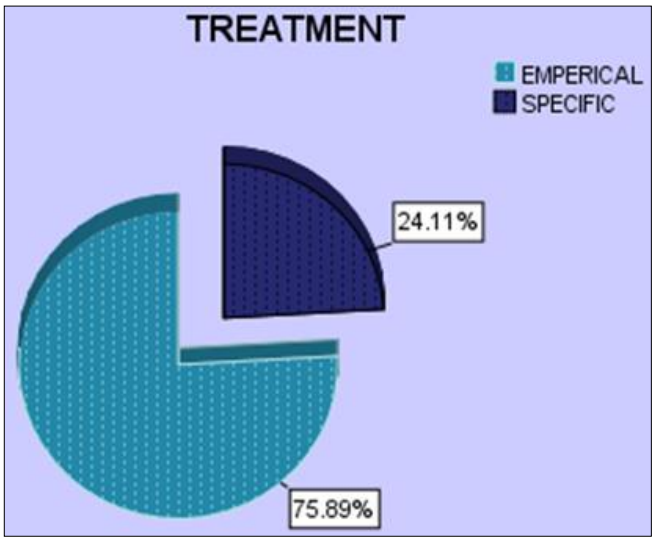

Fig 5: Chart representing type of treatment received by study populations.

Table 7: Patients distribution on ADR

ADR	No. Of patients (%)
No	98(87.5)
Yes	14(12.5)
Total	112(100.0)

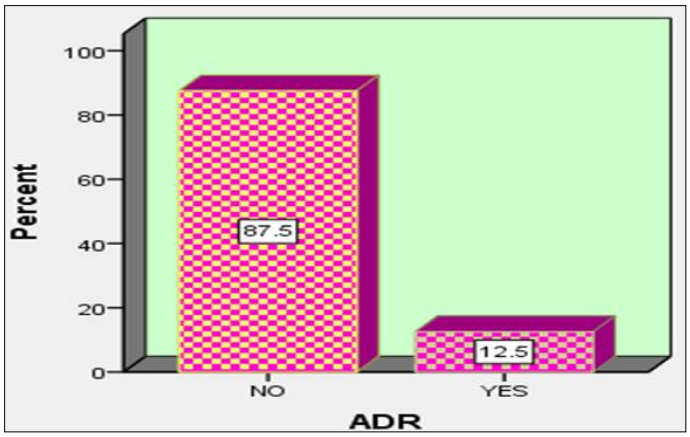

Fig 6: Figure showing percentage of ADR incidences in the study population

Conclusion

- The medical and social burden of malaria is enormous due to irrational prescribing practices, increased drug resistance.
- For appropriate selection of antimalarial and antibiotic treatment proper diagnosis and standard guideline is required.
- Specific hospital guideline should be developed so that selection of antimalarials in specific malarial species can be done rationally.

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References

1. WHO Global malaria programme. World malaria report. World health organization, 2014.
2. Madeeha Malik, Mohamed Azmi Ahmad Hassali, Asrul Akmal Shafie, Azhar Hussain. Why Don't Medical Practitioners Treat Malaria Rationally? A Qualitative Study from Pakistan. Tropical Journal of Pharmaceutical Research,2012:11(4):673-681.
3. Bege Dauda. Antimalarial drug prescription and doctors' perception on malaria in hospitals of Kaduna state, Nigeria: A Pilot study. Master thesis in public health. Sweden, Umea International School of Public Health: Umea University, 2009.
4. Ramesh Holla, Kishore SG, Praveen Kulkarni, Koradhanyamath DM. situation analysis of national antimalaria programme in a district of Karnataka. Sch. Acad. J. biosci,2014:2(10):704-08.
5. Olurishe TO, Maiha BB, Olurishe CO, Abdullahi H. Short term pre- intervention evaluation of artemisinin combination therapy usage in a tertiary health facility in northern Nigeria Journal Pharmaceutical Sciences,2007:6(2):93–98.