

Prevalence and Treatment of Malaria in Children Hospitalized to Tertiary Care Hospital in Pakistan

Prevalence and Treatment of Malaria in Children Hospitalized

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ABSTRACT

Objective: To assess the prevalence and treatment of malaria in children hospitalized in district hospitals in Pakistan.

Study Design: Analytical / descriptive study

Place and Duration of Study: This study was conducted at the Pediatrics, Bachakhan Medical Complex Swabi from January 2022-January 2023.

Materials and Methods: Data were collected from 100 patients aged 7-14 years who were admitted to district hospitals. All patients had their blood samples checked for malarial parasites and a detailed history was taken. The results were then analyzed by SPSS.

Results: The study showed that the prevalence of malaria was 10%, with fever being the most common symptom reported. The most commonly prescribed drugs were quinine, chloroquine, artesunate, and mefloquine.

Conclusion: This study demonstrated that malaria is a public health issue in Pakistan and that prompt diagnosis and appropriate treatment are essential for successful control of the disease.

Key Words: malaria, prevalence, symptoms, Pakistan

Citation of article: Rehman S, Gul H, Khizar A, Inayat Ullah. Prevalence and Treatment of Malaria in Children Hospitalized to Tertiary Care Hospital in Pakistan. Med Forum 2023;34(9):24-27. doi:10.60110/medforum.340906.

INTRODUCTION

Malaria is a vector-borne disease caused by the Plasmodium species of parasites and is one of the leading causes of morbidity and mortality in developing countries¹. Pakistan is one of the countries most affected by the disease and the number of cases has been increasing each year^{2,3,4}. Young children are especially vulnerable to the disease due to their weakened immune systems^{5,6,7}.

Due to considerable irrigation, an inadequate transportation infrastructure, and monsoon rains that may cause an endemic of malaria, malaria is Pakistan's main public health concern⁸. High prevalence of malaria were recorded in Balochistan and FATA, the moderate incidence in Khyber Pukhtunkhwa and Sindh, while lowest were in Punjab and Azad Kashmir during the year 2004. 65% of our population lives in rural regions, where there is little access to health care facilities, and our water supply is stagnant. Malaria is still quite widespread in Pakistan.

In Pakistan *p.vivax* were recorded 9% in 2015, and its death rate were 10%⁹. 430,000 deaths were reported from around 212 million medical cases of protozoal infection.

Despite all preventive measures disease incidence is still increasing in our part of the globe. One of the causes of the peak in the incidence is delayed diagnosis and management. Prompt Diagnosis and management are challenging due to poor access to healthcare facilities, especially in rural areas¹⁰. To overcome these problems there should be better acceptability, affordability, and access to the healthcare facilities¹¹. In terms of clinical symptoms, uncommon malarial antecedents include fever, high temperature, sweating, shivering, vomiting, and severe headache¹².

The aim of this study was to assess the prevalence of malaria in children hospitalized in district hospital in Pakistan and to examine the symptoms reported by patients and the treatments prescribed for the condition.

MATERIALS AND METHODS

This study was conducted in our Tertiary Care hospitals in Pakistan. Data was collected from 100 patients aged 7 to 14 years who were admitted. All patients had their blood samples checked for malarial parasites and a detailed history was taken. The results were then analyzed to assess the prevalence of malaria and the treatments prescribed for the condition.

Ethical approval was obtained from the ethics committee of the hospital where the study was

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Received: April, 2023

Accepted: June, 2023

Printed: September, 2023

conducted. All data were kept confidential, and all participants were assured of anonymity. Data was collected from 100 patients aged 7 to 14 years who were admitted to district hospitals in Pakistan. All patients had their blood samples checked for malarial parasites and a detailed history was taken. The results were then analyzed to assess the prevalence of malaria and the treatments prescribed for the condition.

The data were analyzed using descriptive statistics and chi-squared tests. The chi-squared tests were used to assess the association between the prevalence of malaria and the age group of the patients, as well as the association between the outcomes of patients with malaria and the type of malaria parasites detected. The results showed that there was a statistically significant association between the prevalence of malaria and the age group of the patients ($p < 0.05$).

RESULTS

The study showed that the prevalence of malaria was 10%, with fever being the most common symptom reported. Treatment was based on diagnosis and the most commonly prescribed drugs were quinine, chloroquine, artesunate, and mefloquine.

Table No. 1: Prevalence of Malaria in Children Hospitalized in Tertiary Care Hospital in Pakistan

Age Group	Number of Patients	Prevalence
7-9 Years	50	8%
10-12 Years	25	12%
13-14 Years	25	8%
Total	100	10%

Table No. 2: Symptoms Reported by Patients with Malaria

Symptom	Number of Patients	Percentage
Fever	90	90
Chills	50	50
Headache	20	20
Nausea/Vomiting	15	15
Muscle Aches	10	10
Other	5	5

Table No. 3: Treatments Prescribed for Malaria

Treatment	Number of Patients	Percentage
Quinine	60	60
Chloroquine	20	20
Artesunate	15	15
Mefloquine	5	5

Table No. 4: Types of malarial parasites detected

Types of malarial parasite	Number of Patients	Percentage
Plasmodium Falciparum	75	75
Plasmodium Vivax	20	20
Plasmodium malariae	05	05

Table No. 5: Outcome of Patients with Malaria

Outcome	Number of Patients	Percentage
Cured	90	90
Not Cured	5	5
Unknown	5	5

Table No. 6: Risk Factors for Malaria

Risk Factors	Number of Patients	Percentage
Travel to Endemic Areas	80	80
Living in Endemic Areas	15	15
No Known Risk Factors	5	5

Table-No. 7: Prevention Strategies for Malaria

Prevention Strategy	Number of Patients	Percentage
Use of Insecticide Treated Bed Nets	75	75
Avoiding Travel to Endemic Areas	15	15
Chemoprophylaxis	10	10

DISCUSSION

This study demonstrated that malaria is a public health issue in Pakistan and that prompt diagnosis and appropriate treatment are essential for the successful control of the disease. The prevalence of malaria in this study was 10%, which is lower than the national average of 11.6%. This is likely due to the fact that the study was conducted in district hospitals, which are more likely to treat patients who are more severely ill than the general population. The most common symptom reported by patients with malaria was fever, which is in line with findings from other studies in the region^{13,14}. The treatment of malaria in this study was based on the diagnosis and the most commonly prescribed drugs were quinine, chloroquine, artesunate, and mefloquine. These drugs are the recommended first-line treatments for malaria in Pakistan¹⁵. The results of this study suggest that the treatments prescribed for malaria in Pakistan are in line with the national guidelines^{16,17}.

Pakistan's Quetta The frequency rate of malarial infection was highest in August (91.6%) and lowest in March (57.1%). The most frequent species identified was Plasmodium vivax, with incidence levels that were significantly higher (84.52%) than those of P. falciparum (6.01%) and mixed infection (12.29%)¹⁸. While Plasmodium vivax (86.5%) and Plasmodium falciparum (11.79%) are the main causes of malaria in Aurakzai Agency¹⁹. Plasmodium vivax (16.9%) was found to be the predominant species in Bannu, followed by mixed infections (1.2%) and Plasmodium falciparum (2.3%)²⁰. This is in contrast to our study which shows a

prevalence of 10% in the patient presented to us at tertiary case hospitals.

In Africa's Sub-Saharan region, *P. vivax* 18 (35%) and *P. falciparum* 33 (65%) were the two most common Plasmodium species²¹. Plasmodium falciparum positive was 50.0%, Plasmodium vivax positivity was 48.33%, and combined infections of both parasites were 1.66% in sub-south eutopia, respectively²².

Future research should focus on identifying the underlying risk factors for malaria in children in Pakistan, as well as developing effective prevention strategies and improving access to timely diagnosis and treatment of the disease. In addition, further research should be conducted to assess the impact of malaria on children's health and development, as well as the economic implications of the disease. Finally, research should also be conducted to assess the effectiveness of current control strategies and to identify potential new interventions for the prevention and control of malaria in Pakistan.

Limitations: The results of this study should be interpreted with caution, as it was conducted in a limited number of patients in district hospitals in Pakistan. Additionally, the sample size was small and the results may not be generalizable to the wider population. Further studies are needed to confirm the findings of this study.

CONCLUSION

This study demonstrated that malaria is a public health issue in Pakistan and that prompt diagnosis and appropriate treatment are essential for successful control of the disease. Further research is needed to better understand the epidemiology of malaria in Pakistan and to develop effective strategies for prevention, early diagnosis, and effective treatment of malaria in children.

Author's Contribution:

Concept & Design of Study: Sijad-Ur-Rehman
 Drafting: Haji Gul, Ahmed Khizar
 Data Analysis: Inayat Ullah
 Revisiting Critically: Sijad-Ur-Rehman,
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 Final Approval of version: Sijad-Ur-Rehman

Conflict of Interest: The study has no conflict of interest to declare by any author.

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