URL: http://dx.doi.org/10.31703/gpsr.2023(VIII-I).04 DOI: 10.31703/gpsr.2023(VIII-I).04

Citation: Mohammad, A., Khan, M. Q., Kiramatullah, Afridi, H. G., & Rehman, S. U. (2023). Examination and Treatment of Malaria in Children Hospitalized to District Hospitals in Pakistan. *Global Pharmaceutical Sciences Review, VIII*(I), 24-29. https://doi.org/10.31703/gpsr.2023(VIII-I).04

Cite Us

Vol. VIII, No. I (Winter 2023) Pages: 24 – 29 ISSN (Print): 2788-5569 ISSN (Online): 2788-5445

Examination and Treatment of Malaria in Children Hospitalized to District Hospitals in Pakistan

Amir Mohammed [a] Muhammad Qasim Khan [b] Kiramatullah [c]

Haji Gul Afridi [d] Sijad-Ur-Rehman [e]

Abstract: *To assess the prevalence and treatment of malaria in children hospitalized in district hospitals in Pakistan. This study was conducted in Department of Pediatrics MMC hospital Mardan from Jan 2019 to Jan 2020. Data was collected from 100 patients aged 7 to 14 years who were admitted in 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. 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. 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, Pakistan, Prevalence, Symptoms

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 countries"(Oluwafemi, Azuaba, & Kura, 2020; Organization, 2020a, 2020c). Pakistan is one of the country most affected by the disease and the number of cases has been increasing each year (Ibrahim, Khan, & Akhtar, 2014; Kakar, Khan, & Bile, 2010; Zubairi et al., 2013). Young children are especially vulnerable to the disease due to their weakened immune systems (Herekar, Iftikhar, Nazish, & Rehman, 2020; Hussain, 2020; Jabeen, Ansari, Ikram, Khan, & Safdar, 2022; Umer et al., 2019). The aim of this study was to assess the prevalence of malaria in children hospitalized in district hospitals in Pakistan and to examine the symptoms reported by patients and the treatments prescribed for the condition"(Thomée, Härenstam, & Hagberg, 2011).

Methodology

This study was conducted in district hospitals in Pakistan. Data was collected from 100 patients aged 7 to 14 years who were admitted in district hospitals. 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.

Statically Analysis

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

[a] Assistant Professor, Department of Pediatrics LRH Peshawar, KP, Pakistan.
[b] Associate Professor, Department of Paediatrics BKMC/MMC Mardan, KP, Pakistan.
[c] Assistant Professor, Department of Paediatrics BKMC/MMC Mardan, KP, Pakistan.
[d] Assistant Professor, Paeds GJkMC Swabi, KP, Pakistan.
[e] Associate Professor, Department of Paediatrics BKMC Swabi, KP, Pakistan.

Corresponding Author: Muhammad Qasim Khan (Associate Professor, Department of Pediatrics BKMC/MMC Mardan, KP, Pakistan. Email: qasimkhan.dr.02@gmail.com)

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 ($p<0.05$). Furthermore, there was a statistically significant association between the outcomes of patients with malaria and the type of malaria parasites detected ($p<0.05$).

Data Collection

Data was collected from 100 patients aged 7 to 14 years who were admitted in 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.

Ethical Consideration

Ethical approval was obtained from the ethics committee of the hospital where the study was conducted. All data was kept confidential, and all participants were assured of anonymity.

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 1

Prevalence of Malaria in Children Hospitalized in District Hospitals 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 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 3

Treatments Prescribed for Malaria

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

Table 4

Types of Malaria Parasites Detected

Type of Malarial Parasite	Number of Patients	Percentage (%)
Plasmodium Falciparum	75	75

Plasmodium Vivax	20	20
Plasmodium Malariae	5	5

Table 5

Outcome of Patients with Malaria

Outcome	Number of Patients	Percentage (%)
Cured	90	90
Not Cured	5	5
Unknown	5	5

Table 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 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 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"(Liu, Jing, Kang, Liu, & Liu, 2021; Malik et al., 2019; Organization, 2017, 2019, 2020b).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 Pakistan (Mitchell, Weinberg, Posey, & Cetron, 2019; Organization, 2018b, 2020a; Vatandoost, Raeisi, Saghafipour, Nikpour, & Nejati, 2019). The results of this study suggest that the treatments prescribed for malaria in Pakistan are in line with the national guidelines"(Organization, 2018a; Qureshi, Fatima, Afzal, Khattak, & Nawaz, 2019).

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.

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.

Future Finding

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.

References

Global status report on alcohol and health 2018. (2018, September 27). WHO | World Health Organization. https://www.who.int/publications/i/item/9789241565639

Herekar, F., Iftikhar, S., Nazish, A., & Rehman, S. (2019). Malaria and the climate in Karachi: An eight year review. *Pakistan Journal of Medical Sciences*, *36*(1). https://doi.org/10.12669/pjms.36.ICON-Suppl.1712

Hussain, Z. (2020). Investigation of a cluster of pediatric pulmonary tuberculosis cases in Gilgit-Baltistan (GB) Pakistan 2019. *International Journal of Infectious Diseases*, *101*, 223-224. https://doi.org/10.1016/j.ijid.2020.11.021

Ibrahim, S. K., Khan, S., & Akhtar, N. (2014). Epidemiological finding of malaria in district Buner Khyber Pakhtunkhwa, Pakistan. *World J Med Sci, 11*, 478-482. https://doi.org/10.5829/idosi.wjms.2014.11.4.9153

Jabeen, A., Ansari, J. A., Ikram, A., Khan, M. A., & Safdar, M. (2022). Impact of climate change on the epidemiology of vector-borne diseases in Pakistan. *Global Biosecurity*, *4*. https://doi.org/10.31646/gbio.163

Kakar, Q., Khan, M., &Bile, K. (2010). Malaria control in Pakistan: New tools at hand but challenging epidemiological realities. *Eastern Mediterranean Health Journal*, *16*(Supp.), 54-60. https://doi.org/10.26719/2010.16.supp.54

Liu, Q., Jing, W., Kang, L., Liu, J., & Liu, M. (2021). Trends of the global, regional and national incidence of malaria in 204 countries from 1990 to 2019 and implications for malaria prevention. *Journal of Travel Medicine*, *28*(5). https://doi.org/10.1093/jtm/taab046

Malik, M. S., Afzal, M., Farid, A., Khan, F. U., Mirza, B., & Waheed, M. T. (2019). Disease status of Afghan refugees and migrants in Pakistan. *Frontiers in Public Health*, *7*. https://doi.org/10.3389/fpubh.2019.00185

Mitchell, T., Weinberg, M., Posey, D. L., &Cetron, M. (2019). Immigrant and refugee health. *Pediatric Clinics of North America*, *66*(3), 549-560. https://doi.org/10.1016/j.pcl.2019.02.004

Oluwafemi, T. J., Azuaba, E., & Kura, Y. M. (2020). Stability analysis of the disease free equilibrium of malaria, dengue and typhoid triple infection model. *Asian Research Journal of Mathematics*, 15-23. https://doi.org/10.9734/arjom/2020/v16i1130238

Organization, W. H. (2017). *Summary report on the eighth intercountry meeting of national malaria programme managers from HANMAT and PIAM-net countries, Islamabad, Pakistan 12–14 December 2016*. (2016, December 12). World Health Organization (WHO). https://www.who.int/publications/i/item/WHO-EM-MAL-384-E

Organization, W. H. (2018a). *WHO country cooperation strategy at a glance: Pakistan*. (2018, May 1). WHO | World Health Organization. https://www.who.int/publications/i/item/WHO-CCU-18.02-Pakistan

Organization, W. H. (2020a). *Malaria eradication: Benefits, future scenarios & feasibility*. (2020, April 20). World Health Organization (WHO). https://www.who.int/publications/i/item/9789240003675

Organization, W. H. (2020b). *Report on antimalarial drug efficacy, resistance and response: 10 years of surveillance (2010-2019)*. (n.d.). World Health Organization (WHO). https://www.who.int/publications-detail-redirect/9789240012813

Organization, W. H. (2020c). *WHO technical brief for countries preparing malaria funding requests for the global fund (2020–2022)*. (n.d.). World Health Organization (WHO). https://www.who.int/publications-detail-redirect/9789240004139

Qureshi, N. A., Fatima, H., Afzal, M., Khattak, A. A., & Nawaz, M. A. (2019). Occurrence and seasonal variation of human plasmodium infection in Punjab province, Pakistan. *BMC Infectious Diseases*, *19*(1). https://doi.org/10.1186/s12879-019-4590-2

Thomée, S., Härenstam, A., & Hagberg, M. (2011). Mobile phone use and stress, sleep disturbances, and symptoms of depression among young adults - a prospective cohort study. *BMC Public Health*, *11*(1). https://doi.org/10.1186/1471-2458-11-66

Umer, M. F., Zofeen, S., Majeed, A., Hu, W., Qi, X., & Zhuang, G. (2019). Effects of socio-environmental factors on malaria infection in Pakistan: A Bayesian spatial analysis. *International Journal of Environmental*

Research and Public Health, *16*(8), 1365. https://doi.org/10.3390/ijerph16081365

Vatandoost, H., Raeisi, A., Saghafipour, A., Nikpour, F., & Nejati, J. (2019). Malaria situation in Iran: 2002–2017. *Malaria Journal*, *18*(1). https://doi.org/10.1186/s12936-019-2836-5

Zubairi, A. B., Nizami, S., Raza, A., Mehraj, V., Rasheed, A. F., Ghanchi, N. K., Khaled, Z. N., & Beg, M. A. (2013). Severe *Plasmodium vivax* Malaria in Pakistan. *Emerging Infectious Diseases*, *19*(11), 1851-1854. https://doi.org/10.3201/eid1911.130495