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Research Article

**INCIDENCE OF MALARIAL INFECTION IN RURAL
POPULATION OF OKARA, PAKISTAN**¹Dr Khalid Basheer, ²Dr Bilal Aslam, ²Dr. Muhammad Zubair¹Rural Health Centre Okara²Jinnah Hospital Lahore**Article Received:** February 2020**Accepted:** March 2020**Published:** April 2020**Abstract:**

Objective: Despite enormous development, malaria claims lives of many during the outbreak seasons in Pakistan .due to lack of availability of resources the health sector fails to cope up with the increasing number of cases .this study is devised to estimate the incidence of malaria in rural population of okara.**methodology:**the study was carried out from February to november 2019 in rural area of bhama bhala okara district blood samples being taken from the patients presenting by themselves to the Rural health centre okara with malarial symptoms or by making home visits through a specialized team in order to obtain blood samples and making a smear with could be taken back to the health centre ,stained with giemsa stain and species identified under the guidance of experienced lab technicians. **results:**.A total of 2196 blood smears were obtained during february till november 2019 from various age groups distributed from 1 to 80 yrs.The commonest species observed was p.flaciparum with highest incidence of 17.77% in 20 yrs old and above.9.1% p falciparum was observed in 1 to 10yrs of age and 7.0% in 11 to 20 yrs old.p vivax was also obtained however it was less in incidence and ratio.7.8% in 20 yrs and above 6% in 1 to 10 yrs and 3% in.: 11 to 20 yrs of age.

Keywords: malaria; incidence ratio,giemsa stain,p.falciparum.

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INTRODUCTION:

Pakistan serves as a middle zone of malarial belt within the tropics and subtropical countries of the world. Millions of new cases of malaria occur each year worldwide, with about 95% being reported from rural areas of Punjab, thus having major malarigenic potential (1). Malaria is caused by a vector (female mosquito) transporting plasmodium, causing typical symptoms of fever, headache, myalgia, and vomiting (2). In Pakistan, so far, two strains of plasmodium vivax and falciparum remain the dominant cause of infection, causing around 99% of malarial deaths in Pakistan. Physicians reinforce that in countries having both of the strains, elimination of P. vivax is the major challenge as it tends to lodge and hide in the liver. Malarial spread usually occurs in April for plasmodium vivax and October in the case of plasmodium falciparum. This study was designed to find out the incidence of malaria in Pakistan in the region of Okara, Pakistan. The outcomes of this study may provide evidence for local control and prevention strategies in Punjab, Pakistan.

Pakistan is regarded as having a moderate level of endemicity with a national annual parasitic incidence of 1.69%, more or less, changes in provinces and districts due to weather and plantation densities [10]. However, Pakistan still remains one of the most malarigenic countries in the EMRO region of the World Health Organization (WHO, Geneva, Switzerland) (11). The infection rate of plasmodium vivax is accounted to be four times more than plasmodium falciparum. The presence of both strains of plasmodium also leads to mixed infections [14] and Pakistan has a high number of such mixed infections, however, they remain underreported due to the extensivity of P. falciparum infections [15]. This infection has a severe impact each year on developing countries like Pakistan, despite all the precautionary strategies it remains a major threat to the health system of Punjab [18,19]. Which highlights the importance of effective surveillance as well as annual reports mentioning the number of cases reported in each season, in efforts to curtail malaria. And a very effective means to divert health resources for this purpose. Malaria incidence shows

different geographical spread with respect to weather and terrain [1,16]. The spread of malaria, however, needs to be studied in detail, focusing on the areas of its occurrence [17,18]. Studies on malaria, including its incidence, different age groups which are at increased risk, genders, blood types, fatality rate, risk calculation and many other aspects, have been helpful in successful sculpturing and carrying out of programs on malaria control and prevention [19].

METHOD:

Study aimed to explore malaria cases and incidence at the district level in Pakistan. Provinces of Pakistan including Sindh, Balochistan, Punjab, KPK, Gilgit Baltistan, and independent tribal agencies which are further divided into districts and making a total of 146 districts in total with climatic diversities ranging from high mountains to dry terrains and moderate plains and coastal areas [29].

Data collection: A survey was conducted from February 2019 to November 2019 in the rural area of Bhama Bhal Okara, Pakistan, in order to record and screen the species of parasite from malaria-infected patients. These cases were detected by adopting two ways: either by blood samples being taken from the patients presenting themselves to the Rural Health Centre Okara with malarial symptoms or by making home visits through a specialized team in order to obtain blood samples and making a smear which could be taken back to the health centre, stained with Giemsa stain, and species identified under the guidance of experienced lab technicians.

RESULTS:

A total of 2196 blood smears were obtained during February till November 2019 from various age groups distributed from 1 to 80 years. The commonest species observed was P. falciparum with the highest incidence of 17.77% in 20 years old and above. 9.1% P. falciparum was observed in 1 to 10 years of age and 7.0% in 11 to 20 years old. P. vivax was also obtained, however, it was less in incidence and ratio. 7.8% in 20 years and above, 6% in 1 to 10 years and 3% in 11 to 20 years of age.

Table 1: age wise over all incidence of malarial infection in Okara (rural).

| No of samples | Total no of patients having malaria. | Total Percentage of infection | Infection by P.Vivax | Infection by P.falciparum |
|---------------|--------------------------------------|-------------------------------|----------------------|---------------------------|
| 924 | 140 | 15.15 | 56 (6.0%) | 84(9.09%) |
| 698 | 70 | 10.02 | 21(3.0%) | 49(7.02%) |
| 574 | 147 | 25.60 | 45(7.83%) | 102(17.77%) |
| 2196 | 357 | 16.25 | 122(5.55%) | 235(10.70%) |

| Age group in yrs | F(o) | F(e) | F(o) | F(e) | Total |
|------------------|------|------|------|------|-------|
| 1-10 | 84 | 92.2 | 56 | 47.8 | 140 |
| 11-20 | 49 | 46.0 | 21 | 24.0 | 70 |
| 21 above | 102 | 96.8 | 45 | 50.2 | 147 |
| total | 235 | | 122 | | 357 |

CONCLUSION:

Infection from *P.falciparum* was noted to be more prevalent in the study as compared to *P.vivax* effecting mainly age group 21yrs and above.

REFERENCES:

1. Faburay, B. The case for a “one health” approach to combating vector-borne diseases. *Infect. Ecol. Epidemiol.* 2015, 5, 28132. [CrossRef] [PubMed]
2. World Health Organization (WHO). *World Malaria Report 2017*; WHO Press: Geneva, Switzerland, 2017; pp. 33–41.
3. Hundessa, S.H.; Williams, G.; Li, S.; Guo, J.; Chen, L.; Zhang, W.; Guo, Y. Spatial and space-time distribution of *Plasmodium vivax* and *Plasmodium falciparum* malaria in China, 2005–2014. *Malar. J.* 2016, 15, 595. [CrossRef] [PubMed]
4. Gunda, R.; Chimbari, M.J.; Shamu, S.; Sartorius, B.; Mukaratirwa, S. Malaria incidence trends and their association with climatic variables in rural Gwanda, Zimbabwe, 2005–2015. *Malar. J.* 2017, 16, 1–13. [CrossRef] [PubMed]
5. Gething, P.W.; Elyazar, I.R.F.; Moyes, C.L.; Smith, D.L.; Battle, K.E.; Guerra, C.A.; Patil, A.P.; Tatem, A.J.; Howes, R.E.; Myers, M.F.; et al. A long neglected world malaria map: *Plasmodium vivax* endemicity in 2010. *PLoS Negl. Trop. Dis.* 2012, 6, e1814. [CrossRef] [PubMed]
6. Cotter, C.; Sturrock, H.J.W.; Hsiang, M.S.; Liu, J.; Phillips, A.A.; Hwang, J.; Gueye, C.S.; Fullman, N.; Gosling, R.D.; Feachem, R.G.A. The changing epidemiology of malaria elimination: New strategies for new challenges. *Lancet* 2013, 382, 900–911. [CrossRef]
7. Feachem, R.G.A.; Phillips, A.A.; Hwang, J.; Cotter, C.; Wielgosz, B.; Greenwood, B.M.; Sabot, O.; Rodriguez, M.H.; Abeyasinghe, R.R.; Ghebreyesus, T.A.; et al. Shrinking the malaria map: Progress and prospects. *Lancet* 2010, 376, 1566–1578. [CrossRef]
8. Imwong, M.; Nakeesathit, S.; Day, N.P.J.; White, N.J. A review of mixed malaria species infections in anopheline mosquitoes. *Malar. J.* 2011, 10, 253. [CrossRef] [PubMed]
9. Ginouves, M.; Veron, V.; Musset, L.; Legrand, E.; Stefani, A.; Prevot, G.; Demar, M.; Djossou, F.; Brousse, P.; Nacher, M.; et al. Frequency and distribution of mixed *Plasmodium falciparum-vivax* infections in French Guiana between 2000 and 2008. *Malar. J.* 2015, 14, 10–15. [CrossRef] [PubMed]
10. Directorate of Malaria Control Program Pakistan. *National Malaria-Strategic Plan-Pakistan (2015–2020)*, 2014. Available online: <http://www.dmc.gov.pk/documents/pdfs/1NationalMalaria-StrategicPlan-Pakistan.pdf> (accessed on 10 November 2017).
11. Program Management Unit DoMC. *Malaria Annual Report 2016, 2017*. Available online: <http://dmc.gov.pk/documents/pdfs/Malaria%20Annual%20Report%202016.pdf> (accessed on 15 November 2017).
12. Rahman, S.; Jalil, F.; Khan, H.; Jadoon, M.A.; Ullah, I.; Rehman, M.; Khan, A.M.; Khan, A.; Hayat, A.; Iqbal, Z. Prevalence of malaria in district Shangla, Khyber Pakhtunkhwa, Pakistan. *J. Entomol. Zool. Stud.* 2017, 5, 678–682.
13. Owens, S. Malaria and the millennium development goals. *Arch. Dis. Child.* 2015, 100, S53–S56. [CrossRef] [PubMed]
14. Gupta, B.; Gupta, P.; Sharma, A.; Singh, V.; Dash, A.P.; Das, A. High proportion of mixed-species *Plasmodium* infections in India revealed by PCR diagnostic assay. *Trop. Med. Int. Health* 2010, 15, 819–824. [CrossRef] [PubMed]
15. Khatoon, L.; Khan, I.U.; Shah, S.A.; Jan, M.I.; Ullah, F.; Malik, S.A. Genetic diversity of *Plasmodium vivax* and *Plasmodium falciparum* in Kohat District, Pakistan. *Braz. J. Infect. Dis.* 2012, 16, 184–187. [CrossRef]
16. Fareed, N.; Ghaffar, A.; Malik, T.S. Spatio-temporal extension and spatial analyses of dengue from Rawalpindi, Islamabad and Swat during 2010–2014. *Climate* 2016, 4, 23. [CrossRef]
17. Shahzadi, S.; Akhtar, T.; Hanif, A.; Sahar, S.; Niaz, S.; Bilal, H. Molecular detection of malaria in South Punjab with higher proportion of mixed infections. *Iran. J. Parasitol.* 2014, 9, 37–43. [PubMed]
18. Oneeb, M.; Maqbool, A.; Lateef, M.; Babar, M.E. Detection of *Plasmodium falciparum* infection in *Anopheles stephensi* in Punjab, Pakistan. *Pak. J. Zool.* 2015, 47, 1192–1195.
19. Dash, A.P.; Valecha, N.; Anvikar, A.R.; Kumar, A. Malaria in India: Challenges and opportunities. *J. Biosci.* 2008, 33, 583–592. [CrossRef] [PubMed]