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MALARIA PARASITE STATUS IN THE STATE OF UTTAR PRADESH BETWEEN 2018 AND 2022

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AUTHOR'S CONTRIBUTION

The sole author designed, analysed, interpreted and prepared the manuscript.

Short Communication

ABSTRACT

Background: To the best knowledge of the author, there is no report on the current status of Malaria in the state of Uttar Pradesh, India. This study is an attempt in that direction.
Materials and Methods: The study design included an analysis of the 2017 and 2018 annual reports as well as the website of the of the National Centre for Vector-Borne Diseases Control (NCVBDC).
Results: Bareilly District in Uttar Pradesh had a low Annual Parasite Incidence (API) of Malaria of 0.06 in 2017 which increased to 7.32 in 2018.
Conclusions: If interventions like the treatment of asymptomatic carriers take place, it is expected that the API in this district and the entire state will come down quickly.

Keywords: Malaria; Uttar Pradesh; Annual Parasite Incidence.

1. INTRODUCTION

The state of Uttar Pradesh is situated in the northern part of India. It is bounded by Uttarakhand and Nepal in the north; Madhya Pradesh and Chhattisgarh in the south; Haryana, Delhi and Rajasthan in the west and Bihar and Jharkhand in the east [1-3] (Fig. 1).

2. MATERIALS AND METHODS

The study design included an analysis of the 2017 and 2018 annual reports as well as the website of the of the National Centre for Vector-Borne Diseases Control (NCVBDC).

3. RESULTS

Annual Parasite Incidence (API):

Annual Parasite Incidence (API) is given by the formula:

$$\text{API} = \frac{\text{Confirmed cases for one year}}{\text{Population under surveillance}} \times 1000$$

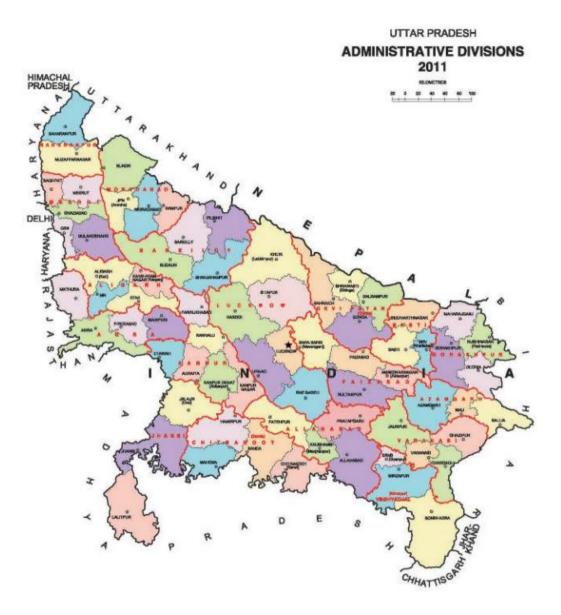[++] *Scientist 'E';*
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UTTAR PRADESH
ADMINISTRATIVE DIVISIONS
2011

Fig. 1. Map showing the State of Uttar Pradesh
[Source: (1)]

Table 1. Comparison of the API of Malaria in Uttar Pradesh, 2017 and 2018

Serial No.	District	API	
		2017	2018
1	Agra	0.02	0.02
2	Mathura	0.04	0.03
3	Mainpuri	0.07	0.06
4	Firozabad	0.07	0.04
5	Aligarh	0.14	0.15
6	Kasganj	0.16	0.26
7	Hathras	0.13	0.12
8	Etah	0.27	0.29
9	Bareilly	0.06	7.32
10	Pilibhit	0.01	0.21
11	Shahjahanpur	0.02	0.11

Serial No.	District	API	
		2017	**2018**
12	Badaun	0.42	5.54
13	Moradabad	0.18	0.11
14	Jyotiba Phule Nagar	0.12	0.09
15	Rampur	0.24	0.17
16	Bijnore	0.12	0.08
17	Sambhal	0.17	0.08
18	Lucknow	0.02	0.03
19	Unnao	0.01	0.01
20	Rae-Bareli	0.00	0.01
21	Sitapur	0.00	0.15
22	Hardoi	0.11	0.79
23	Lakhimpur Kheri	0.03	0.04
24	Faizabad	0.00	0.01
25	Ambedkar Nagar	0.01	0.01
26	Sultanpur	0.08	0.12
27	Amethi	0.03	0.01
28	Barabanki	0.00	0.02
29	Gonda	0.01	0.01
30	Balrampur	0.01	0.00
31	Bahraich	0.00	0.04
32	Shravasti	0.01	0.01
33	Basti	0.00	0.00
34	St. Kabir Nagar	0.02	0.00
35	Siddharth Nagar	0.06	0.04
36	Gorakhpur	0.01	0.00
37	Maharajgunj	0.00	0.01
38	Deoria	0.00	0.00
39	Kushi Nagar	0.02	0.02
40	Azamgarh	0.00	0.00
41	Mau	0.00	0.00
42	Ballia	0.00	0.00
43	Varanasi	0.11	0.08
44	Chandauli	0.02	0.05
45	Jaunpur	0.04	0.02
46	Ghazipur	0.02	0.01
47	Mirzapur	1.44	0.94
48	Sonbhadra	2.71	1.99
49	Bhadohi	0.59	0.31
50	Allahabad	0.55	0.28
51	Kaushambi	0.18	0.13
52	Fatehpur	0.17	0.15
53	Pratapgarh	0.03	0.02
54	Kanpur Nagar	0.06	0.08
55	Kanpur Dehat	0.26	0.33
56	Farrukhabad	0.45	0.63
57	Kannauj	0.30	0.21
58	Etawah	0.08	0.04
59	Auraiya	0.37	0.45
60	Jhansi	0.14	0.12
61	Jalaun	0.14	0.13
62	Lalitpur	0.21	0.11
63	Chitrakoot	0.66	0.40
64	Banda	0.32	0.15
65	Hamirpur	0.26	0.23
66	Mahoba	0.21	0.08

Serial No.	District	API	
		2017	**2018**
67	Meerut	0.04	0.01
68	Bagpat	0.10	0.03
69	Ghaziabad	0.09	0.03
70	Gautam Budh Nagar (NOIDA)	0.23	0.23
71	Bulandshahar	0.06	0.06
72	Hapur	0.21	0.13
73	Saharanpur	0.36	0.11
74	Muzaffar Nagar	0.28	0.06
75	Shamli	0.18	0.09
State	Uttar Pradesh	0.14	0.38

[Source: (2) and (3)]

Table 2. Number of malaria cases in Uttar Pradesh, 2018 to 2022

2018	2019	2020	2021	2022*
86486	92732	28668	10792	5793

[Source: (4) and (5)];* till 22nd November 2022

According to the most recent data available on the NCVBDC website (data for the year 2018), the API for the state of Uttar Pradesh was 0.38. In 2017, the API was 0.14. However, by going through the data, it is seen that the Malaria problem is not equally distributed between its districts as can be seen from the following table (Table 1): [4,5].

4. DISCUSSION

It is observed that there was an increase in the API of the state over the two years. Although the NCVBDC data for 2019 are not available, as per a newspaper report, Uttar Pradesh reported 74749 cases of Malaria from January to September of 2019 and of these, nearly 71% were detected in just two districts – District Bareilly and District Badaun [6]. Bareilly

District reported 37824 cases (51%) while Badaun District reported 15273 cases (20%).

As seen from the table below (Table 3), the above was a continuation of the epidemics which began in these two districts in 2018:

Another finding from the 2019 epidemic was that, out of the 74749 cases of Malaria in the state, 9690 were found to be due to *P. falciparum*. Out of these 9690 cases, 8057 were from Bareilly and 1551 were from Badaun i.e., both together contributing around 99% of the cases. The remaining 82 cases were from other districts of Uttar Pradesh.

As seen from the table below (Table 4), a similar finding was observed during the outbreak of 2018:

Table 3. Comparison of the API of Malaria in Bareilly & Badaun Districts, 2017 & 2018

Serial No.	District	API	
		2017	**2018**
1	Bareilly	0.06	7.32
2	Badaun	0.42	5.54

[Source: (2) and (3)]

Table 4. Comparison of the *P. falciparum* % of 4 Districts of Uttar Pradesh., 2017 & 2018

Serial No.	District	*P. falciparum* %	
		2017	**2018**
1	Bareilly	0.00	46.49
2	Badaun	1.43	19.79
3	Pilibhit	0.00	20.65
4	Shahjahanpur	4.76	9.16

[Source: (2) and (3)]

All the above four districts together constitute the Bareilly Division which is an administrative division of Uttar Pradesh.

From Table 2, it is observed that the problem of Malaria is coming down in Uttar Pradesh.

5. CONCLUSIONS

During 2016, the Indian Government formulated the Malaria Elimination in India framework which spanned 2016 – 2030 [7]. It was founded on the World Health Organization (WHO) Global Technical Strategy for Malaria, spanning the same period, which was formulated during 2015 and updated in 2021 [8]. The goal is to reach no Malaria cases in the country by the year 2027 and then after waiting for a period of three years, the WHO can then grant Malaria-free status certification by 2030.

If a system of complete diagnosis and treatment is adopted in the districts of the Bareilly Division, it is quite likely that the API of Malaria may come down much faster in Uttar Pradesh, especially if it must reach the target of zero cases by 2027. This would enable the country to receive the certification of Malaria elimination in 2030.

COMPETING INTERESTS

Author has declared that no competing interests exist.

REFERENCES

1. Government of India. Map of Uttar Pradesh. Census 2011. Registrar General and Census Commissioner of India. Available:https://www.censusindia.gov.in/2011 census/maps/atlas/09part1.pdf Accessed on 25 April 2022

2. Government of India. National Center for Vector Borne Diseases Control. Available:https://nvbdcp.gov.in/WriteReadDat a/l892s/49230636891670413820.pdf Accessed on 5 January 2023.

3. Government of India. National Center for Vector Borne Diseases Control. Available:https://nvbdcp.gov.in/WriteReadDat a/l892s/59189982061670413836.pdf Accessed on 5 January 2023.

4. Government of India. Annual Report of National Vector-Borne Disease Control Programme; 2018. Available:https://nvbdcp.gov.in/Doc/Annual-Report-2018.pdf Accessed on 25 August 2021.

5. Government of India. Annual Report of National Vector-Borne Disease Control Programme; 2017. Available:https://nvbdcp.gov.in/Doc/Annual-Report-2017.pdf Accessed on 31 August 2021

6. Available:https://timesofindia.indiatimes.com/c ity/bareilly/over-70-of-total-malaria-cases-in-up-reported-from-only-two-districts/articleshowprint/71446666.cms Accessed on 25 April 2022

7. Government of India. National Framework for Malaria Elimination in India; 2016–2030. Available:https://nvbdcp.gov.in/WriteReadDat a/l892s/National-framework-for-malaria-elimination-in-India-2016%E2%80%932030.pdf Accessed on 17 September 2021

8. World Health Organization. Global Technical Strategy for Malaria; 2016–2030. Available:https://www.who.int/publications/i/it em/9789240031357 Accessed on 17 September 2021.

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