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Evaluation of malaria cases among the outpatient visits to Ekiti State University Health Centre Ado-Ekiti, Nigeria: Pre- and Post-COVID incidence

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Abstract

The occurrence of COVID-19 pandemic that broke into the world in early 2020 was envisaged to affect existing diseases. This study evaluated the extent to which COVID-19 pandemic has affected malaria cases among the staff and students of Ekiti State University (EKSU), Ado-Ekiti, Nigeria. Clinical data involving malaria cases of outpatient visits to EKSU Health Centre during 2019 and 2021 were collected from the Record Department of the Health Centre for statistical analysis. Data were analyzed with SPSS version 20 with probability value of < 0.05 as significant. Results showed that 1,246 people visited EKSU Health Centre as outpatients in 2019 and 1,243 in 2021. Only 642 (51.5%) had malaria in 2019 while 604 (48.6%) had malaria in 2021 with no significant difference ($P= 0.143$) in both years. The highest malaria cases was observed in April (57.7%) in 2019 and December (55.6%) in 2021. There was no significant difference in the malaria cases across the different months of both years. Malaria cases was higher in males than females in both years but without significant difference ($P= 0.429$). COVID-19 appears not to have effect on malaria cases in Ekiti State University Community Ado-Ekiti and possibly in other Nigerian universities.

Keywords: Malaria; Covid-19; EKSU; University; Outpatient visit; Ado-Ekiti

1. Introduction

Malaria is a common febrile illness that affect many people in Nigeria. The disease causes a lot of hardship and loss of economic time. Malaria is the major disease in Nigeria that causes absenteeism of pupils and students from schools and working adults from attending to their works. It constitutes a threat for the survival of most children especially under five and pregnant women. In Nigeria, malaria alone was reported to cause 194,000 deaths with estimated 68 million cases in 2021 [1]. Nigeria has the highest burden of malaria globally, accounting for nearly 27% of the global malaria burden [1]. The risk of transmission exists throughout the country, all year round.

Since covid-19 was reported in December 2019, in Wuhan City, Hubei Province, China [2], which broke into many countries of the world by early year 2020, it has been affecting some other existing diseases. COVID-19 is a disease caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) that can result in respiratory distress. For those with chronic disease, the impact has been particularly profound [3, 4]. Heart disease, diabetes, cancer, chronic obstructive pulmonary disease, chronic kidney disease, and obesity are all conditions that increase the risk for severe illness from COVID-19 [5]. By the end of February 2020, COVID-19 had spread to several regions of the world causing morbidity and mortality. Initially, the World Health Organization declared the outbreak on the 30th of January, 2020, as a Public Health Emergency of international concern but later it was labeled as a pandemic. Within this period, most countries of the world including Nigeria had started recording cases of COVID-19 disease [6, 7, 8, 9, 10].

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Various measures were put in place by most countries of the world to contain the virus responsible for COVID-19. These included lockdown and monitoring of the infected people. In Nigeria, all offices, schools and works were closed down from March to September 2020. Resumption to works and schools only commenced by October 2020. On 12th October, 2020, Federal Government of Nigeria announced the reopening of schools nationwide to allow pupils and students return back to their schools. Consequently, Nigerian students from various universities in the country including students from Ekiti State University returned to their schools by October 2020. Thus, this study was initiated with the objectives to evaluate the extent to which the occurrence of COVID-19 has affected the cases of malaria among the staff and students of Ekiti State University (EKSU), Ado-Ekiti, Nigeria. In this study, the cases of malaria among the outpatient visits to EKSU Health Centre in 2019 (before COVID-19) were compared with the outpatients in 2021 (after COVID-19).

2. Methods

The data for this study were collected from the Record Department of Ekiti State University (EKSU) Health Centre, Ado-Ekiti. The Health Centre provides clinical service for both staff and students of EKSU community. EKSU is a public University owned by Ekiti State Government of Nigeria. Ekiti is one of the 36 states in Nigeria. EKSU was created in 1982 with various Faculties, Departments, Ventures and Directorates. EKSU Health Centre is one of the Directorates in the University. The University is located at Ado-Ekiti which is the capital of Ekiti State. Clinical data involving malaria cases of outpatient visits to the Health Centre during 2019 and 2021 were retroactively collected from Record Department of the Health Centre for statistical analysis.

2.1. Statistical analysis

Data were analyzed with SPSS version 20. Statistics involved were descriptive and chi-square. A probability value (*p*-value) of $p < 0.05$ was regarded as significant for the inferential statistics.

3. Results

Results showed that in 2019, one thousand, two hundred and forty-six (1,246) people visited EKSU Health Centre as outpatients while in 2021 the number of outpatient visits to the Health Centre was 1243 (Table 1). Out of the 1,246 outpatients in 2019, only 642 (51.5%) were diagnosed to have malaria. Similarly in 2021, 604 (48.6%) out of 1,243 outpatients were diagnosed to have malaria (Table 1).

Table 1 Prevalence of malaria parasite among different age group

Age	2019		2021		P-value
	No. Examined	No. with MP	No. Examined	No. with MP	
17-21	505	274 (54.3%)	500	245 (49.0%)	0.095
22-26	475	241 (50.75%)	467	235 (50.3%)	0.898
27-31	64	27 (42.2%)	53	20 (37.7%)	0.625
32-36	54	32 (59.3%)	43	26 (60.5%)	0.904
37-41	64	33 (51.6%)	69	38 (55.1%)	0.685
42 and above	84	35 (41.7%)	111	40 (36.0%)	0.424
Total	1246	642 (51.5%)	1243	604 (48.6%)	0.143

MP = Malaria Parasite, $\chi^2 = 2.141^a$, $df = 1$, $P\text{-value} = 0.143$

Results also showed that no significant difference ($P = 0.143$) existed in the number of malaria cases in year 2019 and 2021 (Table 1). In both years, patients between 31-36 years of age had the highest number of malaria cases while patients above 41 years old had the least number of malaria cases. However there was no significant difference existing in the number of malaria cases across the different age groups in 2019 and 2021 as the *P-value* for each age group was greater than 0.05 (Table 1).

Table 2 shows the occurrence of malaria cases across the different months of the year 2019 and 2021. The highest cases of malaria was observed in April (57.7%) in 2019 while the highest cases of malaria in 2021 was in December (55.6%). Similarly, no significant difference existed in the number of malaria cases in each month of year 2019 and 2021 (Table

2). In both years, males had higher percentages of malaria cases than females (Table 3). The number of malaria cases in males was 55.5% against 48.1% recorded in females in year 2019. Similarly in 2021, number of malaria cases in males was 50.7% against 46.9% recorded in females. However, no significant difference ($P= 0.429$) existed in the number of malaria cases between the males and females (Table 3).

Table 2 Prevalence of malaria parasite between months during pre-COVID and post-COVID incidence

Month	2019		2021		P-value 2019 against 2021
	No. Examined	No. with MC	No. Examined	No. with MC	
January	92	43 (46.7%)	92	42 (45.7%)	0.882
February	86	43 (50.0%)	91	47 (51.6%)	0.826
March	110	56 (50.9%)	115	52 (45.2%)	0.393
April	130	75 (57.7%)	131	63 (48.1%)	0.120
May	106	53 (50.0%)	99	52 (52.5%)	0.718
June	138	75 (54.3%)	130	62 (47.7%)	0.276
July	157	87 (55.4%)	157	78 (49.7%)	0.309
August	75	35 (46.7%)	97	46 (47.4%)	0.922
September	130	61 (46.9%)	111	48 (43.2%)	0.567
October	86	42 (48.8%)	81	42 (51.9%)	0.697
November	93	50 (53.8%)	94	47 (50.0%)	0.607
December	43	22 (51.2%)	45	25 (55.6%)	0.680
Total	1246	642 (51.5%)	1243	604 (48.6%)	0.143

MC = Malaria Cases, $\chi^2 = 2.141^a$, $df = 1$, $P\text{-value} = 0.143$

Table 3 Prevalence of malaria parasite between male and female during pre-COVID and post-COVID

Sex	2019		2021	
	Number Examined	Number of MC	Number Examined	Number of MC
Male	573	318 (55.5%)	552	280 (50.7%)
Female	673	324 (48.1%)	691	324 (46.9%)
Total	1246	642 (51.5%)	1243	604 (48.6%)

MC = Malaria Cases, $\chi^2 = 0.626^a$, $df = 1$, $P\text{-value} = 0.429$

4. Discussion

The aim of this research was to evaluate the impact of COVID-19 on malaria cases among the staff and students of Ekiti State University Ado-Ekiti. This will form part of baseline data that could be useful to quantify the impact of COVID-19 on malaria at Ekiti State University, Ado-Ekiti, Nigeria and by extension to many Nigerian universities. The results of this study show that, COVID-19 has no significant impact on malaria cases in Ekiti State University community as no difference was observed in the cases of malaria in 2019 which was a year before the occurrence of COVID-19 and 2021 a year after COVID-19. Even though many cases of COVID-19 were reported in Nigeria during the time of the pandemic in 2020 [6, 7, 8, 9, 10], but this seems not to have significant effect on malaria cases among the staff and students of Ekiti State University Ado-Ekiti. It is likely that no members of Ekiti State University community had an exposure to COVID-19 during the time of the pandemic. This further strengthens the report that Africa appeared to be the least affected continent by the viral pandemic in terms of number of cases and the incidence of serious illnesses [11]. It could also be possible that COVID-19 does not have a direct negative impact on malaria infection in which further studies are required to confirm this.

The results of malaria cases in this study whether before or after COVID-19 were relatively similar to the results of malaria prevalence recorded from Ekiti State in the past studies [12, 13]. This negates the claim that COVID-19 pandemic would cause a great increase in malaria burden in low-income countries like Nigeria where little fund is given to control and elimination programs of malaria infection [14]. However, 619,000 malaria deaths were estimated to occur globally in 2021 compared to 625 000 in the first year of the pandemic. In 2019, before the pandemic struck, the number of deaths stood at 568 000. Malaria cases continued to rise between 2020 and 2021, but at a slower rate than in the period of 2019 to 2020. The global cases of malaria reached 247 million in 2021, compared to 245 million in 2020 and 232 million in 2019 [15].

5. Conclusion

The results obtained from this study suggest that COVID-19 did not have any significant effect on malaria cases in Ekiti State University Community, Ado-Ekiti. This may be the usual occurrence in many Nigerian universities.

Compliance with ethical standards

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Disclosure of conflict of interest

Author declares no conflict of interest.

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Statement of ethical approval

The ethical approval (MOH/EKHREC/EA/U/15) to conduct this study was obtained from Ethics and Research Committee, Ekiti State University Teaching Hospital, Ado-Ekiti, Ekiti State, Nigeria.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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