Review of: "Misdiagnosis of Dengue Fever as Malaria and Typhoid Fever and Their Co-infection in Rural Areas of Southwest Nigeria"

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Potential competing interests: No potential competing interests to declare.

Dear authors,

Your manuscript titled “Misdiagnosis of Dengue Fever as Malaria and Typhoid Fever and Their Co-infection in Rural Areas of Southwest Nigeria” in question presents a comprehensive study within its field. However, there are key areas where the paper could benefit from further development to enhance its impact and clarity.

“Instead of Malaria fever,” “malaria” should be written in the Introduction section. And “malaria” should begin with a lowercase letter, not an uppercase letter; I mean, it should not be written as “Malaria” but should be written as “malaria.” All these corrections should be done along with the manuscript.

I’m confused a little bit about how the Dengue cases are being misdiagnosed as malaria and unnecessarily treated with antimalarial drugs. As far as I understood, dengue testing is not part of the national testing scheme. It means that Dengue cases can be missed. But what about malaria? Isn’t malaria included in the national testing scheme? I mean, how is the malaria diagnosis done? If the malaria testing is in place routinely, there is no possibility to treat a non-malaria patient with antimalarial drugs. If the malaria diagnosis is performed only clinically and treatment initiated without laboratory diagnosis, this should be stated in the manuscript.

Regarding the text below, I recommend you to use the World Health Organization’s (WHO) information page. You can reach it at: https://www.who.int/news-room/fact-sheets/detail/malaria

“Malaria remains one of the deadliest infectious diseases in Africa, and its parasites belong to the genus Plasmodium. In humans, malaria is caused by *P. falciparum, P. vivax, P. malariae, P. ovale, P. knowlesi*[11]. Among the parasites known to transmit malaria, *P. falciparum* is the most common species identified (75%), followed by *P. vivax* (20%) [12][13].”

The information needs to be revised as it includes incorrect information such as, in humans, malaria is caused by 5 *Plasmodium* species: *P. falciparum, P. vivax, P. malariae, P. ovale, P. knowlesi,*and parasites do not transmit malaria, they are the causative agents. The second sentence is totally wrong scientifically. Moreover, *P. falciparum* is common in Africa but not globally. In summary, please change the text according to the information page of the WHO.

“Aedes” and “Plasmodium” terms should be written in italics (*Aedes, Plasmodium*).

Regarding the study design;

You have stated as “This study is a cross-sectional research conducted in several health facilities in rural areas of Southwest Nigeria. A crosssection of the patients seeking diagnosis for malaria and typhoid were tested..”

As far as I understood, you took blood samples from the patients who applied to the health centers. I mean, you did not use samples in laboratories that already existed, right? Were the patients diagnosed with one of the mentioned diseases before you took the blood samples? Or did you take blood samples from the patients who applied to the health center having the signs and symptoms of the mentioned diseases? It is confusing because you have written “patients seeking diagnosis for malaria and typhoid.” If they were patients previously diagnosed with malaria or typhoid fever, it should be clearly indicated as “patients diagnosed with malaria and typhoid fever” instead of saying “patients seeking diagnosis for malaria and typhoid” (patients do not diagnose a disease, doctors do).

If they were not diagnosed before, then indicating “patients having the signs and symptoms..” would be better.

It is interesting that all the samples you have taken (1074) were positive for malaria or typhoid fever, according to Table 1. Weren’t there any negative samples? You have stated that you evaluated the positive results, but to mention the negative samples will make the text stronger.

Regarding the results;

The text you have written is:

Results

A total of 1074 blood samples were collected from different health facilities in rural locations in Southwest Nigeria, of which 714 (69%) blood samples were positive for malaria parasites, 333 (31%) were positive for typhoid fever, and from the malaria- and typhoid-positive samples, 315 (29.4%) were positive for dengue using the NS1 protein (Table 1).

But in Table 1, the total number of malaria cases is 741. Which one is true?

Regarding the misdiagnosis;

Misdiagnosis A total of 54 DENV-positive samples were wrongly diagnosed as malaria parasites, while 14 (1.3%) samples positive for DENV were misdiagnosed as typhoid fever (χ=86.877, p=0.0000001), showing an association between all misdiagnosed samples, **which is a confirmation that some samples were diagnosed as typhoid and malaria but were actually positive for dengue alone**.

I need the answers to my questions again:

Isn’t malaria included in the national testing scheme? I mean, how is malaria diagnosis done?

Also, in Table 3, No. of Dengue is written as 333, and No. of Typhoid (should be typhoid fever) is written as 315. These numbers are different from the ones you have written in the results section.

I need to have the answers to my questions and clarification on the issues I have mentioned above before going further in the evaluation of the manuscript.

Thank you.