



## **The Incidence of Typhoid Fever and Malaria Parasite among Internal Displaced Persons Camps in Maiduguri**

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**Abstract:** *The study on the comparative effect of cooperative learning strategy and lecture method on the academic achievement of Nigeria Certificate in Education (NCE) 100 Level students in electrolysis; was a pretest posttest quasi-experimental-control group design. The population of the study comprised 243 students from physics and chemistry departments of Federal College of Education (Technical), Gombe, and from the population, 87 students were used as sample using purposive sampling technique. Electrolysis Achievement Test (EAT) was the instrument used for the study and data collection. Two research questions and two corresponding research hypotheses were raised. Descriptive statistic was used to answer the research questions while t-test was used to test the research hypothesis at 0.05 level of significance. The study showed significant difference in academic achievement between the two groups in favour of those taught using cooperative learning strategy and also revealed no significant difference on gender when taught using cooperative learning strategy. It was recommended that teachers should employ the use of cooperative learning strategy since it has been established to enhance students' academic achievement especially when they are allowed to interact freely with one another and in groups.*

**Keywords:** *Cooperative learning, Lecture Method, Academic Achievement, N.C.E. Students, Electrolysis*

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### **INTRODUCTION**

Diseases of various origins have been identified to pose major challenges to human well-being (Itillis *et al.*, 2002). Among these diseases, febrile due to various causative agents are the most prevalent cause of morbidity and mortality in developing tropical and sub-tropical countries including Nigeria. In primary and secondary health institutions where the diagnosis is often based on clinical findings and where diagnostic facilities are inadequate, such illnesses pose a significant threat to public health (Archibald and Reller, 2001). Even in tertiary health institutions reliance

on clinical diagnosis is a common practice for initial diagnosis. Clinical diagnosis lacks specificity, as febrile illnesses may be clinically distinguishable from one another resulting in misdiagnosis and mistreatment (Ochiai, *et al.*, 2008). This could result in avoidable exposure of patients to potentially toxic drugs, an increase in the chance of emergence of resistance to anti-bacteria and drugs, a wrong estimate of disease burden, and misplaced priority for policy on disease control.

Typhoid fever and malaria are two of the leading infectious febrile illness affecting humans, especially in sub-Saharan Africa where there are poor sanitary, and conducive climate conditions for malaria vectors. Typhoid fever is a systematic bacterial infection caused by salmonella enterica serotype Typhi D. (S. Typhi). It is characterized by acute illness, the first non-specific manifestations of which include fever, headache, abdominal pain, nausea vomiting, fatigue, and malaise. The disease remains an important public health problem in developing countries.

In 2000 it was estimated that over 2.16 million episodes of typhoid occurred worldwide resulting in 216,000 deaths and that more than 90% of this morbidity and mortality occurred in Asia and Africa (Crump *et al.*, 2004). On the other hand, malaria is a systematic protozoan infection caused by plasmodium species showing similar signs and symptoms with the salmonella (Typhoid) infection with a minute degree of difference such as body high temperature. (Knell, 1991).

## **METHODOLOGY**

About 5ml of various blood samples collected from all enrolled subjects as described by Barbara (2006) allow to coagulate and the serum was transferred to EDTA container bottles as described by Cheesbrough (2000), briefly with the subject in a sitting position on the armrest so that the median cubital vein could be identified put under some tension to immobilize the skin was disinfected with methylated spirit (ethanol) (which is to dry and the upper arm was tight with tunicates so that the vein would be prevail using the syringe with needle is a blood sample from through the prevail vein about 5ml the sample was the prevail into an EDTA container and shake or raised gently to prevent from clotting the sample remaining in laboratory prevention. The EDTA container can preserve samples for almost 14 days. In the case of typhoid (Widal), the test was conducted, using tube agglutination methods as described by Olopoeni & King (2000), and Aminu *et al.*, (2009).

Appropriate number of sets (as required one set for each antigen suspension) of wells of the micro litre plate were selected and labeled 1 to 8. Into each well 1.9ml of normal saline was dispensed. To each well also 0.1ml of serum sample was added to each well and mixed. The dilution of the serum sample achieved in each set was as follows: 1:20, 1:40, 1:80, 1:320, 1:640, and 1:280 while one (1) well remain as control. To all the well (1 to 8) of each set one drop of the respective well-mixed antigen suspension from the reagents vials was added and mixed well. Then it was shaking side by side. Sample and reagent to mixed together for possible reaction by indication of agglutination.

**RESULTS AND DISCUSSION****DALORI IDPs CAMP**

S/N	Age	S.typhi (typhoid) (+) VE	S.typhi (typhoid) (-) VE	Malaria Parasite (+)	Malaria Parasite ( - )
1.	6-15	6	4	6	4
2.	2 and above	7	3	2	8
	Percentage	65%	35%	40%	55%

**BAKASSI IDPs CAMP**

S/N	Age	S.typhi (typhoid) (+) VE	S.typhi (typhoid) (-) VE	Malaria Parasite (+)	Malaria Parasite ( - )
1.	6-15	4	6	7	3
2.	20 and above	8	2	5	5
	Percentage	60%	40%	60%	40%

**EYN IDPs CAMP**

S/N	Age	S.typhi (typhoid) (+) VE	S.typhi (typhoid) (-) VE	Malaria Parasite (+)	Malaria Parasite ( - )
1.	6-15	9	1	8	2
2.	2 and above	8	2	7	3
	Percentage	85%	15%	75%	25%

**Discussion**

The mean range of antibody titre among patients with significant titre was 1:40-1:320 and not significantly different in AO 1:20 – 1:160, 1:320 OB 1:160, 1:40 – 1:320, OC 1:60, 1:40 – 320 and O 1:39-1:40-1:320 serotypes (P=0.11). the incidence of typhoid among both children and adults in Dalori, Bakassi, and EYN IDPs Camp are 65%, 60%, and 85% respectively. While that of malaria parasites among both children and adults in Dalori, Bakassi, and EYN IDPs Camp are 40%, 60%, and 75%.

**Conclusion**

This shows the high prevalence of typhoid and malaria parasites among children and adults in all the refugee camps. Based on the result displayed in the previous chapter, it has been concluded that the prevalence of typhoid and malaria parasites in all the Camps is increasing at an alert rate.

## **References**

- Aminut, A., Mekannen, Y., Shimelis, D., & Ephraim, E., (2009). "Febrile illness of different aetiology among outpatients in four health centres in North-eastern Ethiopia", *Japan Journal of infectious Diseases*, Vol.62, Pg:107-110.
- Archibald, L. K. & Reller, L. B. (2001). "Clinical microbiology in the developing countries", *Emergence of infectious diseases*, Vol. 7, Pg:302-305.
- Barbara, J. B. (2006), "Blood cells, a practical guide" (4<sup>th</sup> Edition) Massachussets, Blackwell publishing.
- Cheesbrough, M. (2000). "District laboratory in tropical countries (2<sup>nd</sup> Edition)" Cambridge University Press.
- Crump, A., Luby, S. P., & Mintz, E. D. (2004), "The global burden of typhoid fever", *Bulletin of World Health Organization*, Vol. 82, Pg:558-563.
- Ochia, R. I., Acosta, C. J., Danovaro-Holliday, M. C., Baiging, D., Bhattacharya, S. K., Agtini, M. D., Bhatta, Z. A., Canh, D. G., Ali, M., Shin, S., Wain, J., Pagw, A., Seidleinn, I., & Clement, J. D. (2008), "Study of typhoid fever in five Asian countries: Disease burden and implications for controls". *Bulletin of World Health Organization*, Vol. 86, Pg:260-268.
- Olopoenia, Z. A., & King, A. L. (2000). "Widal agglutination test – 100 years later; still plagued by controversy", *Postgraduate Medicinal Journal*, Vol. 76, Pg:80-84.