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“Measurement of the phase angle of populations using portable bioelectrical impedance analyzers is a convenient, inexpensive and non-invasive way to assess their overall health.”



“The RJL Quantum analyzer is suitable for obtaining measurements in the field.”

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Objective: ESTIMATION OF THE NUTRITIONAL STATUS OF DISPLACED CHILDREN IN A RURAL AREA OF NIGERIA USING BIOELECTRICAL IMPEDANCE ANALYSIS.

Displacement of populations due to political strife is usually associated with changes in nutritional status, particularly among children. One month before a conflict arose, we had examined the growth and nutritional status of 340 Fulani children between the ages of 1 and 18 years who resided in Plateau State in north central Nigeria. The Fulani are semi-nomadic pastoralists whose economy is based on cattle and dairy products. Measurements of the children's height, weight, and body composition were taken, including determination of the phase angle. Phase angle is a reliable indicator of overall nutritional status and is determined from two bioelectrical impedance analysis parameters, reactance and resistance.

Shortly following our initial study, the Fulani were driven out of their homes by religious/ethnic conflict and moved to a temporary settlement camp about 40 km away. Some male heads of household were killed and caused extreme stress in the women and children. Seven months later we were able to visit the families who had recently resettled to a new hamlet and reassess 30 of the children who had been studied before the crisis. The same bioelectrical parameters were measured as in the original study.

Solution: RJL Quantum BIA System

The RJL Systems Quantum bioelectrical impedance analyzer allowed us to obtain information on the nutritional status of the displaced children without having to draw blood samples and perform biochemical analyses.

Results:

The weight and height of the 30 children (17 boys and 13 girls) increased significantly. Fat accounted for about two-thirds of the increase in weight of the boys. On the other hand, the weight increase in the girls was equally divided between fat and fat-free mass. The mean phase angle of the 17 boys and 13 girls did not change significantly in the seven month period following the crisis and displacement. However, when examined on an individual basis, it was found that the phase angle of 7 of the 17 boys and 7 of the 13 girls had decreased during the time there were in the settlement.

A major conclusion of this study was that the growth and nutritional status of children involved in displacement does not necessarily have to adversely affect their nutritional status or body composition. We speculated that the reasons the children coped as well as they did was because that they all had mothers who survived the crisis and they were living as displaced persons in temporary quarters in a region inhabited almost exclusively by people of their own ethnic group. The local government also provided food. Having been moved to an environment that was culturally familiar may have minimized the psychological stress that is usually associated with displacement.

Reference: Glew RH, Bhanji RA, VanderJagt DJ. Effects of displacement resulting from ethnic/religious conflict on the growth and body composition of Fulani children in northern Nigeria. *J Trop Pediatr* 2003; 49: 279-285.