

UNDERNUTRITION – THIRTY YEARS OF THE REGIONAL BASIC DIET: THE LEGACY OF NAÍDE TEODÓSIO IN DIFFERENT FIELDS OF KNOWLEDGE

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Introduction: Undernutrition results from insufficient energy and nutrient intakes to attend to the dietary demands of a healthy life, mainly affecting populations in precarious socioeconomic conditions. In 2020, the study organized by Naíde Teodósio (1915–2005) – a celebrated physician, nutritionist, and humanist – completed 30 years, supporting the formulation of Regional Basic Diet (RBD) for observation of experimental undernutrition (*Arch Latinoam Nutr* 40: 533–547, 1990). This diet was based on research about the eating habits of families that inhabited vast, impoverished regions of the Pernambuco state. This pioneering paper inspired several studies in Brazil and other countries, unveiling pathophysiological mechanisms of the association of RBD-induced undernutrition with prevalent diseases.

Methods: In this study, 75 indexed papers from 1990 to 2020 – which focused on RBD – were analyzed. This diet contains 8% protein, 78% carbohydrate, 1.7% lipid without vitamin supplementation, (against 23%, 56%, 4.5%, and vitamins in the control diet, respectively). The main ingredients from RBD are: manioc flour (*Manioc esculenta*), beans (*Phaseolus vulgaris*), sweet potatoes (*Ipomoea batatas*), and jerked meat. The addressed fields of knowledge were: (1) nervous system, (2) parasitology, (3) inflammation, immune system, and cancer, (4) digestive system, life expectancy, respiratory system and radiopharmacy, (5) endocrine systems and reproductive system, (6) cardiovascular system and (7) renal/urinary system.

Results: The analyzed papers showed that RBD-induced undernutrition potentiated pathological conditions in the different biological systems. In the nervous system, RBD deserves notable mention, with 28 papers focusing the cerebral development. They include studies of the cortical spreading depression described by Aristides Pacheco Leão (*J Neurophysiol* 7: 359–390, 1944). In the parasitology field, six studies approached the undernutrition-schistosomiasis association; in inflammation, RBD modulated release of different cytokines; 4 papers showed the RBD deleterious in the digestive system effects on intestinal microvilli. In the endocrine and reproductive

systems, RBD provoked hypothyroidism and crippling reproductive performance. In the cardiovascular system, RBD provoked hypertension, cardiac failure, and arrhythmias. In the urinary system, the 12 papers showed that RBD affected the renal active transport mediated by Na⁺-transporting ATPases compromising Na⁺ homeostasis and leading to the onset of systemic arterial hypertension and cardiorenal syndrome.

Conclusion: The studies that cited RBD as an undernutrition model contributed to outlining new paradigms of translational science in health, supporting future investigations in humans. The 75 studies that cited the pioneer paper by Naíde Teodósio and coworkers help scientists from different fields to elucidate disease-related mechanisms that affect impoverished populations across the planet.

KEYWORDS: Regional Basic Diet, *In utero* undernutrition, Chronic undernutrition, Prevalent diseases, Undernutrition-associated disease mechanisms.