PRIMARY CARE DIABETES

The 6M Classification of Nutrients

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Abstract

Nutrition is a complex and sometimes confusing subject. The existing classification of nutrients into two groups, macro and micronutrients, does not do justice to the wide spectrum of nutritional foods available. In this opinion piece, we suggest a six-layered 6M hierarchal classification of nutrients that offers a comprehensive and complete understanding of nutrition. Mega, macro, meso, micro, micro-bio, and minimization of anti-nutrients make up the 6M list of nutrients.

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Introduction

The science of nutrition is a complex one. For convenience, nutrients are classified in a binary manner as macro and micronutrients. Carbohydrates, proteins, and fats are listed as macronutrients, while the various vitamins and minerals are considered micronutrients. This differentiation is based on the daily requirement or recommended daily allowance of these nutrients. This binary rubric, however, does not do justice to the wide variety of nutrients that are necessary for health.[1]

Six Layered Classification

We propose a six-layered nutritional structure (Table) to describe the targets and techniques for optimizing nutrition. This alliteratively worded 6M model lists nutrients and nutritional 'levels' according to the quantity needed to maintain health.

Water and other fluids are listed as mega nutrients, as they are required in larger amounts.[2] While macro nutrition refers to the three classic macronutrients: carbohydrates, fats, and proteins, the word meso nutrition focuses on the need for specific types of macronutrients. These include fibre and complex carbohydrates, essential fatty acids, unsaturated fatty acids, and essential amino acids.

Table: The 6M nutrient hierarchy.

- Mega nutrition
  - Water
  - Other beverages
  - Invisible fluid in foodstuffs
- Macro nutrition
  - Carbohydrates
  - Proteins
  - Fat
- Meso nutrition
  - Structure of proteins, e.g., animal proteins; essential amino acids
  - Structure of carbohydrates, e.g., fibre, complex carbs
  - Structure of fats, e.g., essential fatty acids, unsaturated fatty acids
- Micro nutrition
  - Vitamins
  - Minerals
  - Electrolytes
- Microbio nutrition
  - Prebiotics
  - Probiotics
  - Phytochemicals
- Minimization of antinutrients
  - Toxins
  - Poisons
  - Absorption inhibitors

Hidden hunger is a term that highlights the need to focus on micro nutrition, along with macronutrient sufficiency.[3] Micronutrients usually mean vitamins and minerals, but electrolytes are included here because of their relevance to human health.[3] For the same reason, we add the term microbionutrients, which encompasses prebiotics and probiotics, and supports the concept of gut guardianship.[4] Both these are essential for gut and systemic health. Phytochemicals, such as isoflavones, may be listed under the category of micro or microbio nutrients. For convenience, to keep the rubric of three subtypes for each level, we have counted them as micronutrients because they are a "bio" nutrient with no calorific value, similar to pre- and pro-biotics. Furthermore, it is essential to minimize the use of antinutrients like toxins, poisons, and absorption inhibitors. This is important in current times where many endocrine disruptors are in close contact with several food items that are commonly consumed.[5]

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Clinical Significance

This structure provides a complete and comprehensive list of targets to achieve and reminds us of the techniques while planning a balanced diet. It serves as a teaching and learning tool, reminding the healthcare professional to offer adequate nutritional advice. Apart from sufficient macro and micro-nutrition, it is essential to ensure proper mega-, meso-and microbio-nutrition, as well as minimize anti-nutrition. This is equally relevant in all age groups. The 6M classification will prove helpful in the management of chronic metabolic disorders, including diabetes and obesity.

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