Hidden hunger and diabetes care

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Abstract

This communication discusses the concept of hidden hunger, or micro- nutrient deficiency, and its link with diabetes care. It provides simple tools to help diabetes care providers suspect and identify micronutrient deficiency in their clinic. The authors highlight the need to tackle the third frontier of malnutrition - micronutrient deficiency, and add a third component -electrolyte and fluid balance, to the definition of hidden hunger.

Keywords: Diet, nutrition, neurotropic vitamins, micronutrients, iron, calcium, vitamin D, iodine

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Introduction

Malnutrition is common across the world. The World Health Organization estimates that 462 million adults worldwide are underweight, while 1.9 billion adults are overweight or obese.[1] Micronutrient-related malnutrition is grouped separately, with deficiencies of iodine, vitamin A and iron being listed as the most important public health challenges. Micronutrient deficiency is common in all populations. While one third of the American population is at risk of such deficiency, up to two thirds of South Asian populations grapple with various forms of hidden hunger.[2]

From an endocrine perspective, other micronutrient deficiencies are equally important, and must be addressed. Neurotropic vitamin deficiencies lead to conditions such as nutritional neuropathy, which can overlap with diabetic neuropathy, and cause complications such as diabetic foot.[3] Calcium, along with vitamin D, is important for muscle and bone health. These deficiencies are linked to sarcopenia, osteomalacia and osteoporosis, and can increase the risk of falls and fractures.[4]

The years 2016-2025 have been proclaimed as the United Nations Decade of Action on Nutrition.[5] Among other activities, the Decade calls for policy action to align health systems to nutrition needs and strengthen/ promote nutrition governance and accountability, everywhere.

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Hidden hunger and diabetes

The diabetes care ecosystem is a perfect platform to disseminate knowledge, and kickstart action, regarding healthy nutrition. Diabetes management emphasizes the need for a balanced diet, and encourages weight loss in overweight and obese persons.[6] In our focus on glucose and weight-related parameters, however, some aspects of nutritional health may get neglected. These are the micronutrient deficiencies that have aptly been termed as hidden hunger. Hidden hunger is the presence of multiple macronutrient deficiencies which can occur, without a deficit in energy intake, as a result of consuming an energy-dense, but nutrient poor diet.[7] Hidden hunger may also occur because of gastrointestinal disorders associated with disturbed motility and/or absorption.

Hidden hunger and non-communicable disease

The World Health Organization acknowledges the existence of hidden hunger, and its impact on non-communicable disease (NCD) and premature mortality.[7] Along with other risk factors, such as tobacco use, physical activity, and the harmful use of alcohol, it focuses on tackling unhealthy diet so as to save lives and develop national economies.

The third frontier; the third element

Hidden hunger thus becomes the third nutritional frontier that one has to focus on, white preventing and managing diabetes.[8] Along with overweight/obesity and protein energy malnutrition, micronutrient deficiency needs to be addressed in diabetes care. Though the classic definition of hidden hunger includes vitamin and mineral deficiency, we add a third component, fluid and electrolyte deficiency, to complete the spectrum of hunger. Hydration has been shown to be an important element in preventing and managing diabetes and its complications. Electrolyte insufficiency can complicate diabetes and its treatment as well.

Nutritional optimization

Micro nutritional optimization, therefore, must be integrated into diabetes care programmes. Health care professionals should be sensitized and trained to identify

Table-1: High risk conditions for hidden hunger.

Demographic characteristics
● Extremes of age –young and elderly
● Excess nutritional requirements - adolescence, pregnancy, lactation
Nutritional characteristics
● Reliance on cereal-rich diet
● Low-diversity index
● Vegetarian/vegan diet
● Restricted/fat diet
Medical characteristics
● Multiple comorbidities
● Anaemia, sarcopenia, osteopenia/ porosis
● Gastrointestinal complaints such as diarrhoea, steatorrhea
● Use of drugs which impact intestinal function, e.g., laxatives
● Neuropathy

Table-2: Some clinical features of micronutrient deficiency.

Face:	Sunken eyes, pallor
Eyes:	Bitot spots, pallor
Skin:	Dry skin, pellagra, frequent infections and infestations
Hair:	Dry, discoloured hair
Nails:	Brittle, broken
Neck:	Goitre
Limbs:	Neuropathy, neuropathic ulcers
Abdomen:	Frequent diarrhoea, steatorrhea

nutritional deficiency, clinically as well as with the help of simple investigations. Nutritional and culinary counselling, coupled with ensuring access to easily available and affordable healthy food, is an integral part of a physician's responsibility.[9]

The American Diabetes Association does not suggest routine supplementation of vitamins in diabetes care. The astute physician should view each person living with (or at risk of) diabetes as unique, and assess his/her nutritional intake as well as requirements. Table-1 lists some clinical conditions which may be associated with micronutrient deficiency, and which may benefit from micronutrient supplementation. Table-2 shares clinical features which can help identify hidden hunger.

The way forward

Diabetes prevention and care is already integrated with nutritional and dietary management. The focus, however, has always been on calorie and carbohydrate balance. A wider perspective, including optimization of micronutrient intake, will help achieve better health for all, and contribute to accomplishment of the goals laid down by the United Nations Decade of Action on Nutrition.

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