

The triad and pentads of medical nutrition therapy in diabetes

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Abstract

This communication shares learning tools which convey the vast scope and multiple dimensions of medical nutrition therapy (MNT). MNT, an indispensable part of diabetes management, relates to all three domains of the biopsychosocial model of health. The biopsychosocial triad of MNT is a construct which enhances understanding of the various aspects of this therapy. Rubrics such as the dietary pentad, degustation pentad, culinary pentad and sociodietary pentad facilitate and enhance the beauty of person centred MNT.

Keywords: Biopsychosocial triad of nutrition, Culinary pentad, Degustation pentad, Diabetes, Dietary pentad, Medical nutrition therapy, Nutrition, Patient centred care, Person-centred nutrition

Introduction

Nutrition is an integral part of diabetes management. The need for personalized medical nutrition therapy (MNT) is clearly articulated in modern diabetes care guidelines.¹ Often, however, physicians do not accord the same importance to dietary advice as to medical prescription. This may be due to a combination of factors, including lack of awareness or sensitization, and lack of resources to provide person-centred dietary care.²

Current status

In many clinical establishments, MNT may be offered as a pre-printed dietary plan with little scope for modification according to individual needs. Such plans may suggest healthy meals and snacks, without sharing appropriate methods of procurement, preparation, presentation, and preservation of food. Strict diet plans may not take individual psychological and social preferences into consideration, and may not accommodate biomedical needs and limitations.²

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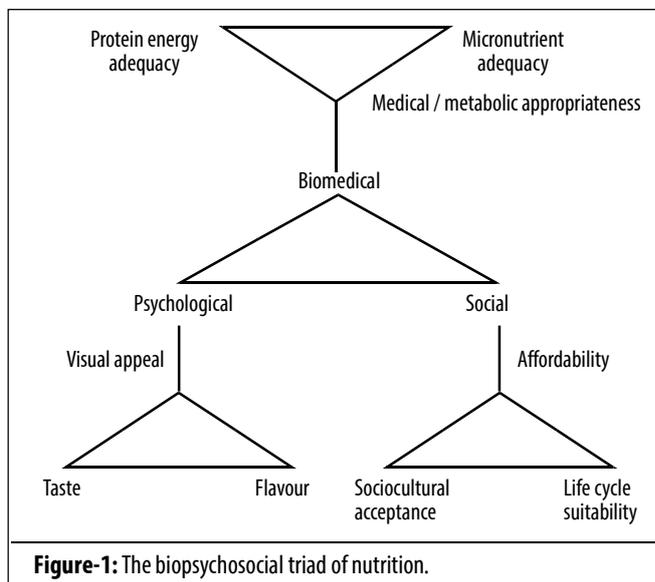


Figure-1: The biopsychosocial triad of nutrition.

Team work

The suboptimal delivery of MNT leads to suboptimal glycaemic control and contributes to poor health outcomes. It is understood, therefore, that improvement in MNT delivery will help enhance diabetes care, and thereby lead to better short term and long term outcomes.^{3,4} Team work is accepted as a basic philosophy of diabetes care, as is shared decision making.⁵ This is true of MNT as well. MNT is too important to be left to the nutritionist alone. To be successful, it needs active involvement of physicians, diabetes educators, culinary scientists, family members, and above all, persons living with diabetes.

Triad of nutrition

To enhance understanding of the wide spectrum of MNT, and the potential for person centred individualization, we propose a biopsychosocial triad of nutrition. This learning model, which includes the biomedical, psychological and social triptych, serves as a framework to understand these dimensions of diet and nutrition (Figure-1).

Biomedical troika

Each angle of the tripod is expanded to a 'troika' of characteristics, which must be considered while crafting

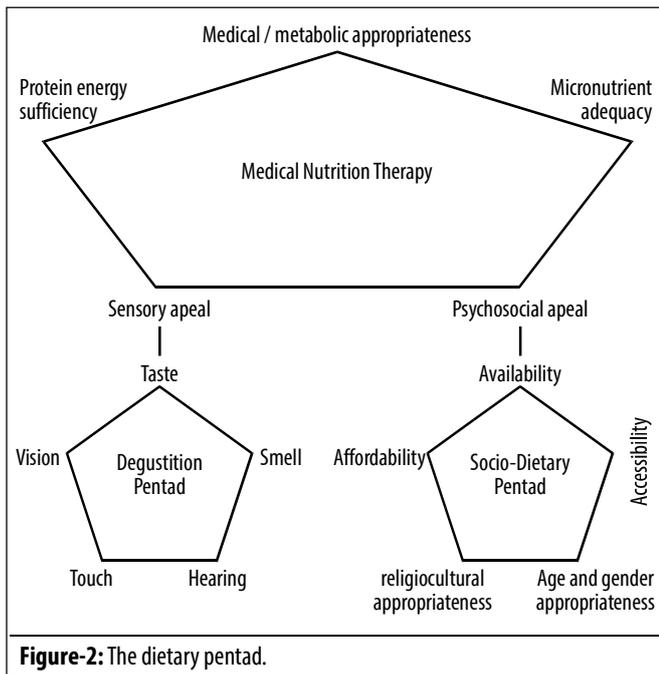


Figure-2: The dietary pentad.

a dietary prescription. Macronutrient (protein energy) and micro nutrient adequacy, along with medical/ metabolic appropriateness, form the biomedical triplet of diet. Every MNT must offer adequate calories, proteins, vitamins and minerals, while keeping the person's medical and metabolic comorbidities in mind. Medical issues such as renal disease and coeliac disease, for example, and metabolic impairment such as dyslipidaemia and hyperuricaemia, must be considered by the MNT prescribes.

Psychological troika

Visual appeal, taste and flavour form the psychological troika of the nutrition triad. For all iterative purposes, the three aspects can be listed as visual appeal, gustatory appeal and olfactory appeal. No MNT will be adhered to if it does not live up to these basic requirements. It is the psychological aspects of food which require team work and contribution from culinary science.⁶

Social troika

The third angle of the biopsychosocial triad, the social domain, is equally important. Affordability, acceptance from a social, cultural and religious viewpoint, as well as appropriateness for the specific life cycle of the person (age, gender, pregnancy, and lactation) are the three targets of "socially correct" MNT. The prescriber, therefore must have in-depth knowledge of the seasonal availability

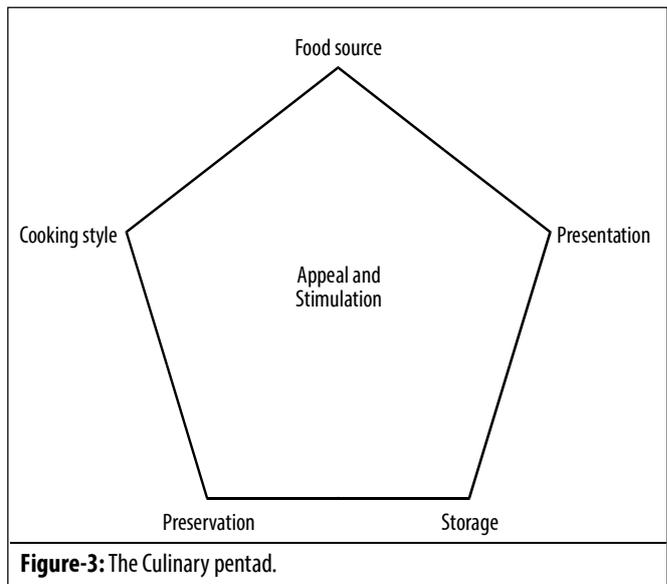


Figure-3: The Culinary pentad.

and cost of various food stuffs, local food taboos and social customs. This must be combined with an understanding of the unique dietary needs of infants, children, adolescents, young adults, antenatal and lactating women, as well as the elderly. The 8A mnemonic is a simple check list which reminds us of the specific requirements of geriatric persons.⁷

Dietary pentad

Another way of presenting the biopsychosocial components of MNT is as a Dietary Pentad (Figure-2). The Dietary Pentad lists 5 factors to remember while planning a diet. Of these, three belong to the biomedical domain: macro-nutrient [protein energy] adequacy, micronutrient adequacy and medical/ metabolic appropriateness. One angle each of the pentad is devoted to the psychosocial and sensory components of MNT. Both these aspects can be expanded to pentads which we term the psychosocial pentad and culinary pentad.

Degustation pentad

The construct of the degustation pentad(Figure-3), which is inspired by Vietnamese culinary philosophy,⁶ suggests that the ideal meal should appeal to all human senses, including vision, touch, smell, taste and hearing. The psychosocial pentad of MNT is a rubric which lists availability, accessibility, affordability and acceptance according to sociocultural mores, and appropriateness for the person-specific stage of life. These points encompass the considerations which are involved in creation of a person centred, and person friendly MNT.

Summary

The biopsychosocial nutrition triad, MNT pentad, culinary pentad and psychosocial dietary pentad are learning tools which serve as teaching and clinical aids as well as checklists on nutrition management. These constructs are similar to age old concepts such as Atreya's Quadruple,⁸ and modern models like the glycemic and metabolic pentad and hexad which support comprehensive diabetes care.⁹

These simple yet comprehensive, learning aids, can be used by all diabetes health professionals at all levels of care. They foster an understanding of the wide spectrum of nutrition and dietetics, sensitize us to the need for person centred care, and encourage team work in MNT provision.

We hope that this communication stimulates interest in person centred MNT, improves the delivery of person friendly MNT, and helps achieve optimal outcomes in diabetes care.

References

1. American Diabetes Association. 4. Lifestyle Management: Standards of Medical Care in Diabetes-2018. *Diabetes Care*. 2018 Jan 1; 41(Supplement 1):S38-50.
2. Kalra S, Joshi S, Baruah M. Medical nutrition therapy for diabetes: The challenge in India. *J Med Nutr Nutraceut*. 2012 ;1:3.
3. Franz MJ, MacLeod J, Evert A, Brown C, Gradwell E, Handu D, et al. Academy of Nutrition and Dietetics nutrition practice guideline for type 1 and type 2 diabetes in adults: systematic review of evidence for medical nutrition therapy effectiveness and recommendations for integration into the nutrition care process. *J Acad Nutr Diet*. 2017; 117:1659-79.
4. Takahara M, Shiraiwa T, Katakami N, Matsuoka TA, Shimomura I. Marked recovery from glucotoxicity of β -cell function after medical nutrition therapy without pharmacotherapy in type 2 diabetic outpatients with extreme hyperglycemia: a pilot retrospective study. *Endocrine journal*. 2017; 64:1125-9.
5. Kalra S, Megallaa MH, Jawad F. Patient-centered care in diabetology: From eminence-based, to evidence-based, to end user-based medicine. *Indian J Endocr Metab* 2012 ;16:871.
6. Kalra S, Choubey N. Involving culinary science as part of the diabetes care team. *J Pak Med Assoc* 2017; 67 :1795-96.
7. Baruah MP, Kalra S, Unnikrishnan AG, Raza SA, Somasundaram N, John M, et al. Management of hyperglycemia in geriatric patients with diabetes mellitus: South Asian consensus guidelines. *Indian J Endocr Metab*. 2011;15:75.