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The Eating Assessment Table - an evidence based nutrition tool for clinicians:

Background, Description, Future of Tool

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Abstract

The complex relationships between health and dietary components and patterns have been intensely studied. Researchers have developed various tools such as food diaries and food frequency questionnaires to help understand relationships between dietary components and health, and have developed indexes such as the Alternative Healthy Eating Index, and the revised Dietary Quality Index, to help understand relationships between dietary patterns and health. These tools have greatly enhanced our understanding, but they are too costly and cumbersome to use in routine clinical practice.

This paper gives a brief overview of the features and advantages of existing tools, and describes a new self administered tool (the Eating Assessment Table - EAT) that retains many of the advantages of research tools, but which is simple enough to be used in clinical practice.

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The background and design of this tool are described as well as a mechanism for guiding the evolution of future versions of this tool. Forms for using this tool in clinical and research settings are supplied in English, French and Spanish.

Keywords

Nutrition assessment; Diet; Nutrition questionnaire; *Dietary index*; *Nutrition tool*

Our food should be our medicine and our medicine should be our food
Hippocrates.

Introduction

The healing arts have made great strides in the past several thousand years, but the father of modern medicine would probably be less than impressed by the scant attention paid to nutrition in conventional medical practice. Nonetheless, considerable progress has been made in recent times towards identifying and quantifying the complex relationships between nutrition and health. Much of this insight comes from large observational studies, such as the Seven Countries' Study¹, Seventh Day Adventist Studies², the Nurses' Health Study³, the National Health and Nutrition Examination Survey⁴, and the Health Professionals follow up study⁵. In order to draw valid conclusions in these studies, the nutrition research community has developed tools to measure diet in accurate and reliable ways.

Diet can be measured prospectively or retrospectively in diaries kept by patients, or through patient interviews. However, prospective food diaries are burdensome on patients, and the act of recording one's intake might influence food choices, such that the week of record is not representative of an individual's usual diet (i.e. exposure misclassification). However, asking participants to recall diet in the near, or even distant past assumes that patients will accurately remember and report their diets, which is not always the case. Collecting and analyzing data using these methods can be costly, and limits their use in large observational studies.

Seeking to capture chronic diet history in an efficient manner, Willet et al. developed, validated, and periodically update a 120-item food frequency questionnaire (FFQ). This semi-quantitative FFQ is linked to an extensive, updated database, which estimates the daily intake (servings/day) of several pre-determined food groups, as well as the micronutrient and macronutrient composition of an individual's diet. Despite their differences, diet records, and FFQs correlate fairly well, and for reasons of cost and convenience, FFQs have become the method of choice for large observational studies.

As our understanding of diet and health progresses, there is evolving consensus that the whole may be greater than the sum of the parts. Overall dietary patterns may have prognostic value above and beyond their nutrient breakdown.^{6, 7} Data from FFQs can be combined in different ways to capture "eating patterns", using validated diet scores based on compliance with one or more dietary recommendations. Some of these scores, such as the Alternative Healthy Eating Index (AHEI)⁸ and the Revised Dietary Quality Index (DQI-R)⁹

have been shown to correlate with the presence of cardiovascular and other chronic disease states⁸, as well as with markers of inflammation and endothelial dysfunction¹⁰. Thus, defining nutrition exposures and clinical outcomes in broader strokes helps to elaborate pathways through which nutrition promotes health. It also comes closer to how patients and clinicians conceptualize nutrition.

FFQs and food diaries are useful in research, but are generally too expensive and time consuming for routine use in clinical practice. Several clinical nutrition screening tools have been described in the literature¹¹⁻¹⁶, however, most of these were designed to identify the malnourished and those at risk of malnutrition in a specific context, (e.g. perioperatively) or in special populations such as pregnant women, the critical ill, or the elderly. Many of these tools serve their purpose, but there are few general screening tools that incorporate the findings of the last decade, and that conceptualize dietary patterns in the ways that validated FFQ-based tools do. This paper describes one such tool.

Background, description and structure of the tool

The Eating Assessment Table (EAT) was developed by clinicians and nutritionists from academic and community settings, under the aegis of The Coalition for the Acquisition of Sound Habits - CASH, a Canadian Health Promotion Charity¹⁷, and has been implemented in two hospitals in Québec and Ontario in the settings of primary and secondary CVD prevention and management, cardiac rehabilitation, and employee wellness. It builds on the foundation of the AHEI and the DQI-R, by borrowing their overall tool design, which defines major domains of interest and calculates an ordinal score for each domain. Domain scores are then added together to form a global score of nutrition quality.

The domains for EAT are: fruits, vegetables, legumes, meat, starchy foods, dairy and replacements, alcohol and omega-3 fatty acids, “empty” calories, cooking methods, knowledge of fats, and one miscellaneous category which includes information on diversity, portion size, meal patterns, nuts and vitamins. Each of the eleven domains has a maximum score of ten. Ten of the domains are added and one is subtracted to give a total score ranging from zero to one hundred.

Where possible, the EAT domains mimic the domains identified in the AHEI and the DQI-R. This works well where the domains correspond to food groups that are recognized by patients such as fruits, vegetables, legumes, meats, dairy, etc. However, some of the domains in these tools are derived from a database-driven analysis of reported foods, and there is no way a patient could accurately evaluate their consumption patterns in such domains. For example, types of fat consumed (i.e., saturated versus polyunsaturated versus monounsaturated, versus trans), and glycemic load.

In such cases, knowledge is used as a surrogate for consumption, recognizing that knowledge may be along the pathway of behaviour change¹⁸. Lastly, EAT queries behaviour patterns that have become part of generally accepted nutritional teaching, but which may not be captured by tools such as AHEI, and DQI-R. Examples are cooking methods, diversity, portion size, and meal patterns (e.g., “grazing” vs. “gorging”).

EAT takes the form of a tabulated questionnaire, and is designed to be self-administered. It takes approximately fifteen minutes to complete, providing the necessary detail under the time constraints of clinical settings. Scoring of the EAT questionnaire takes less than a minute with minimal training. Because this tool is designed primarily for use in routine clinical practice, and not in a research setting, we feel that the loss of accuracy compared to other diet assessment methods is reasonably balanced by the educational gain for individual patients. The tool is appended to this article in English (French and Spanish available online). In certain settings, notably research, it may be preferable to use forms that do not include scoring. PDF forms without scoring will be posted on the websites of *Critical Pathways in cardiology*¹⁹ and The Coalition for the Acquisition of Sound Habits - CASH¹⁷.

Discussion

The Eating Assessment Table is a resource that we believe is a worthwhile addition to the current repertoire of clinical and academic nutrition tools. It does not replace more rigorous research tools such as those derived from FFQs, nor does it replace the educational role of registered dietitians. However, it may play a complimentary role in academic and clinical settings, and provide some utility when such resources are lacking. The guiding principle in the design of the Eating Assessment Table was to enable the topic of nutrition and diet to be easily broached by clinicians and patients working together to improve health.

Future work

Ongoing work is underway to validate the reliability of this tool in diverse settings. It is anticipated that this tool will evolve over time in response to user experience, guided by the evolving nutrition evidence base and the expert opinion of researchers and clinicians. *CASH*, the parent organization responsible for the development of this instrument invites the nutrition community to be a part of this iterative cycle. This tool can be freely used for non-commercial purposes with the sole requirement that the source of the tool, and the name and version # (EAT₂₀₀₈ for the current version) be cited. Those who wish to contribute to the evolution of this tool are invited to contact the author.

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