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DTN2PNU Principles of Human Nutrition: Lecture 3: Part 1: Individual Nutritional Assessment

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Last Lecture Review

- Energy is required by the body to function
- Energy used by the body is ultimately derived from the energy contained in macronutrients
 - Carbohydrate
 - Fat
 - Protein
 - Alcohol
- The energy value of food varies based on its composition
- Human energy needs are based on BMR, TEF, Physical activity and other factors
- A number of tools exist for the measurement of energy expenditure- direct and indirect calorimetry, non-calorimetric methods
- Mechanisms for regulating energy balance is complex
- Body composition will impact on BMR, hence it is important to know how to assess it

Units of Energy

$$1 \text{ kcal} = 4.18 \text{ kJ}$$

$$1 \text{ cal} = 4.18 \text{ J}$$

Individual Nutritional Assessment

Today

Pros and cons of common nutritional screening tools and their effectiveness

Key questions to be covered:

What is a diet history? How is it taken? What are its advantages/limitations?

What is a 24-hour recall? How is it taken? What are its advantages/limitations?

What is a weighed vs estimated food record? How is it taken? What are its advantages/limitations?

What do we do with the information once we have it?

Analysing data- Ready Reckoners, Foodworks and other food analysis packages and tools

Methods of assessment of individuals vs groups

Nutritional Assessment Tools

Common tools include:

- Diet Histories
- 24-hour recalls
- Estimated food diaries/records
- Weighed food diaries/records
- Food Frequency Questionnaires (FFQ)

Diet History

- Started Burke 1974
- Attempts to estimate the usual food intake and meal pattern of individuals over a relatively long period of time (often a month)
- Interview method originally now also computer & paper versions available
- Traditionally 3 Parts
 1. Interview about usual eating habits eg. What do you usually have for breakfast?
 2. Cross check of frequency may include 24 hr recall
 3. 3-day estimated food record- NOW OFTEN OMITTED

Diet History

Advantages

- Don't limit the variability in responses
- Overcome many of the limitations of FFQ

Disadvantages

- Labour intensive (Interview up to 2hr ea)
- Can overestimate intake compared to weighted food record

Food Frequency Questionnaire

- FFQ aims to assess the frequency with which food groups are consumed during a specified time period
- Originally designed to look at food-consumption patterns
- Consists of list of foods with frequency of use response options
- Useful for groups not individuals
- Advantage- Obtains information on usual intake over a month or more, can self-complete, easy to standardise
- Disadvantage- Information is semi-quantitative

24-hour recall

- Nutritionist/Dietitian asks for client to recall exact food intake during the past 24 hours or previous day
- Advantage- quick, cheap, readily standardised
- Disadvantage- single recall does not provide information on 'usual' intake- this can be overcome by doing repeated 24-hour recalls over several days

Weighed food record

- Weigh all food and beverages consumed during a specified time period
- Description of food, cooking method, brand name recorded also
- If eating out- record descriptions of food
- Advantage- Most precise method of estimating food/nutrient intakes of individuals
- Disadvantage- very time consuming, expensive if using supervision, high level of cooperation required, rates range from 35-75%
- May affect foods eaten at the time due to difficulty of measuring, so accurate representation of what was eaten but not of usual intake

Estimated food record/diary

- Record at time of consumption all food and drinks consumed in household measures for a specified period of time
- Description of food, cooking method, brand name recorded also
- Advantage- More people willing to take part as simpler 45-95%, less disruption of normal eating, so more accurate representation of usual intake
- Disadvantage- Loss of precision in quantifying intake- can be partly addressed by providing measuring cups/spoons, 'measuring' pages or educating on quantities prior to record keeping

Selecting a method

Do you want to know:

- Actual intake of individual
- Average usual intake of group or individual
- Proportion of population at risk
- Usual pattern of food use

The best tool to use will depend on the question you want answered

Methods of assessment of individuals vs groups

Individuals

- Weighed food record
- Estimated food record
- Diet history

Group (will discuss group nutritional assessment later this semester)

- FFQ
- 24-hr recall

Limitations

- Generally accepted that all methods of dietary intake assessment relying on self-reported intake tend to underestimate energy intake
- 24-hour recalls worse than food records

Getting the information you need

What do you want to know?

- What eaten/when eaten
- Macro & Micronutrient intakes
- Energy intake
- Specific things- eg. Saturated fat intake for CVD risk

Diet History

- Interviewer should not use leading questions and should use open ended questions instead
 - Leading Qs -Did you have a bowl of cereal for breakfast?
 - Better Qs- Did you have something to eat for breakfast?
- Focus on the information you need- ie. don't focus on alcohol intake with a 12 year old
- Pick up on cues eg. don't just keep going if someone starts crying

So what do we do with the information?

Analysis-

- Ready reckoner
- Foodworks
- Nuttab

You will be learning more and practising this in your tutorials-
and this is a key part of your 1st Assessment task

New developments

- Calorieking- www.calorieking.com.au
- Photography, tape recorders and automatic recording scales
- The i-phone age!!!

Summary

- Nutritional assessment is an important part of a nutritionists/dietitians role
- A number of tools exist to undertake nutritional assessment and all have strengths and limitations:
 - Diet Histories
 - 24-hour recalls
 - Estimated food diaries/records
 - Weighed food diaries/records
 - Food Frequency Questionnaires (FFQ)
- Your goal is to get the information you need so that you can then analyse it and come up with a clear picture of any nutritional gaps/ problems
- Analysis tools include: ready reckoners and Foodworks and enable you to calculate intake of macro and micronutrients

Image Sources

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Thank you