

Measuring Diet and Physical Activity

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NCI Community Networks Cancer Health
Disparities Summit: July 2005

Division of Cancer Control and Population Sciences



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The outline:

- ▶ **Existing measures (diet, physical activity) and where to locate them.**
- ▶ **Emerging directions in nutrition/behavior assessment.**
- ▶ **Future directions and funding opportunities.**

Diet History Questionnaire

- ▶ **Food frequency questionnaire**
 - ▶ 124 food items
 - ▶ Includes portion size & dietary supplement questions
 - ▶ Extensive nutrient and pyramid servings database derived from national dietary data
 - ▶ Self-administered and optically scanned
 - ▶ Web-based version: September 2005

- ▶ **Extensive cognitive research done to ensure ease of use**

- ▶ **Intended for use with adults**

Short Dietary Assessment Instruments (Screeners)

- ▶ **Multiple instruments**
 - ▶ **Fruit/vegetable consumption, percent of calories from fat, fiber, added sugar, dairy**
 - ▶ **F/V in Spanish, Chinese, Korean, Vietnamese**
 - ▶ **Self-administered, in-person or phone administered**

Short Dietary Assessment Instruments (Screeners)

- ▶ **Used to:**
 - ▶ **Characterize median intakes**
 - ▶ **Discriminate between higher vs. lower intakes**
 - ▶ **Track changes over time**
 - ▶ **Examine inter-relationships between diet and other variables**
 - ▶ **Compare findings from other studies**

Dietary Assessment Calibration/Validation Register

- ▶ **Contains study descriptions; publication abstracts compare dietary intake estimates from two or more dietary assessment methods**
 - ▶ Food records, diaries, dietary recalls, FFQs, dietary histories, observed intakes, biological assessments
 - ▶ 164 studies; 746 publications
- ▶ **Facilitates access to the existing body of dietary assessment methodology literature**
 - ▶ <http://www-dacv.ims.nci.nih.gov/>

Glycemic Index (GI) Values Database

- ▶ **GI: Measures the glycemic effect of carbohydrate in a particular food compared to an equivalent amount of carbohydrate in a standard amount of glucose or white bread**
- ▶ **Provides GI values for foods consumed by adults and queried on the DHQ (or other FFQs)**
- ▶ **Food codes from the USDA Continuing Survey of Food Intakes of Individuals (CSFII) are used as a reference**

Daily Food Checklist

- ▶ **Aim: instrument to capture how often certain foods are consumed but without subject burden and reactivity**
 - ▶ Short/moderate list of foods with adjacent check-off boxes
 - ▶ Respondent marks a box each time he/she eats it over a day
 - ▶ Multiple days to capture usual intake
 - ▶ Optically scannable form

Daily Food Checklist

Advantages

- ▶ Does not rely on memory
- ▶ Relatively low respondent and investigator burden
- ▶ Does not change the behaviors it assesses
(Based on data from 30 consecutive days of checklist reports: 1996-97 NCI America's Menu Study)

Resource

Risk Factor Monitoring & Methods Branch

<http://riskfactor.cancer.gov/>

Physical Activity & Energy Expenditure

- ▶ **Movement Assessment Devices**
 - ▶▶ **Pedometer**
 - ▶▶ **Step Counters**
 - ▶▶ **Motion Counters**
 - ▶▶ **Accelerometers**

- ▶ **Doubly Labeled Water**

Physical Activity & Energy Expenditure

- ▶ **Behavioral Observations and Time Motion Analysis**
- ▶ **Diary Methods**
- ▶ **Questionnaires and Interviews**

See Handout

Behavioral Questionnaires

What drives people to eat what they do?

What are the predictors of F/V consumption?



5 A Day Custom Survey

Purpose:

- ▶ **Evaluate F/V intake**
 - ▶ Develop new questions assessing portion sizes in cups
- ▶ **Evaluate predictors of F/V consumption**
 - ▶ Previously established ones
 - ▶ New “out of the box” ones
- ▶ **Over-sample African Americans**

Constructs

- ▶ **Social influence/social support**
 - Other people give me a hard time if I eat a lot of F/Vs
- ▶ **Benefits and Barriers**
 - Have more energy, live a long life; F/Vs not filling, spoil too quickly
- ▶ **Self-efficacy**
 - How confident are you that you could eat F/Vs when eating away from home?
- ▶ **Lifestyle/other correlates**
 - PA (new), smoking, alcohol

Constructs (cont'd)

▶ Preferences

- Salty, sweet, tart/sour, meat, low carbohydrates

▶ Knowledge of recommendations and awareness

- How many cups of F/Vs does the gov't recommend?
- What is the name of the nat'l campaign to eat more F/Vs? Main message? Where have they heard?

▶ Personal Health Beliefs

- How often do you worry about getting a serious illness?
- Has worrying led you to change the way you eat?

Constructs (cont'd)

- ▶ **Food shopping behaviors**
 - Who, how often (regular and going out of way), where, other venues like farmers markets, pick your own, seasonality
- ▶ **Beliefs about vegetarianism**
 - Vegetarians are a bit “different”; cannot relate to vegetarians
- ▶ **Extrinsic/intrinsic motivation**
 - Reason I eat F/Vs is b/c:
 - I want others to see I can do it (Ext)
 - It is imp't to treat my body with respect (Int)

Constructs (cont'd)

- ▶ **Sleep**
- ▶ **Water consumption**
- ▶ **TV/internet use**
- ▶ **Religiosity**
- ▶ **Yoga**
- ▶ **Avoid or restrict certain foods**
- ▶ **Social desirability**
- ▶ **Other attitudes**

F/V Consumption

▶ 2-items

- ▶ On average how many cups of fruit (including 100% fruit juice) do you eat/drink each day?
- ▶ On average how many cups of vegetables (including 100% veg juice) do you eat/drink each day?
- ▶ 1 cup equivalents
 - 1 small apple, 1 large orange, 2 large plums, 32 seedless grapes, ½ cup dried fruit, 8 large strawberries
 - 12 baby carrots; 1 large sweet potato; 1 large ear of corn; 3 broccoli spears, 5 in long; 2 cups of lettuce or raw greens

8 Item F/V Screener

- ▶ **Modified from NHIS questions**
 - ▶ **Frequency**
 - ▶ **Amount in cups**
- ▶ **Include call-out box for 1 cup equivalents as refresher**
- ▶ **From cognitive testing, decided to merge potato category**

Outcome from Cognitive Testing

- ▶ **Knowledge and awareness of F/V recommendations are low**
 - ▶ Awareness: confused with other campaigns/messages
 - Think it is “3 a day” or “1 a day”
 - Don’t know “for better health” message
- ▶ **People convey frustration about “changing” recommendations with many focusing on PA instead of diet**
 - ▶ Most agree to attitudes questions about not paying attention to recommendations and that they are always changing
- ▶ **Cup equivalents are very helpful**

Trans-NIH Initiatives

- ▶ Behavior Change Consortium
- ▶ <http://www1.od.nih.gov/behaviorchange/>
- ▶ <http://www1.od.nih.gov/behaviorchange/summary/summary.htm>

- ▶ Health Maintenance Consortium
- ▶ <http://hmcrc.srph.tamu.edu/default.aspx>

Resource

Health Promotion Research Branch

- ▶ <http://cancercontrol.cancer.gov/hprb/>

Cancer Control Planet

- ▶▶ <http://cancercontrolplanet.cancer.gov>

Future Directions/ Funding Opportunities

- ▶ E-health and real-time data capture
- ▶ Bioengineering Approaches to Energy Balance and Obesity (SBIR/STTR) (PA-04-156)

<http://grants.nih.gov/grants/guide/index.html>

- ▶ NIH Obesity Initiatives

NCI Energy Balance Website

www.cancer.gov/cancertopics/energybalance

National Cancer Institute
U.S. National Institutes of Health | www.cancer.gov

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Energy Balance: Weight and Obesity, Physical Activity, Diet

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Need Help?
Contact us by phone, Web, and e-mail
1-800-4-CANCER

Energy Balance

[NCI Director's Update: Energy Balance: The Complex Interaction of Diet, Physical Activity, and Genetics in Cancer Prevention and Control](#)
At a time when nearly two-thirds of the U.S. population is considered overweight or obese, compelling evidence suggests that excess body weight is a risk factor for many cancers.

[Sinking a Healthy Energy Balance](#)
This edition of BenchMarks sheds some light on the complexities of energy balance and cancer.

[Optimizing Energy Balance to Reduce the Cancer Burden](#)
This section of the NCI Plan and Bypass Budget for FY 2005 focuses on the goals of understanding the causes of adverse patterns of weight, physical activity, and diet; defining their contributions to cancer; and applying this knowledge to cancer prevention and control.

Weight and Obesity

[Obesity and Cancer: Questions and Answers](#)
A fact sheet that summarizes research on the potential link between obesity and cancer risk.

[Cancer Progress Report: Weight](#)
This section of the Cancer Progress Report focuses on the relationship between overweight and obesity and cancer risk.

[Cancer Research Portfolio: Obesity](#)
Information about NCI-supported, obesity-related research projects from the Cancer Research Portfolio database.

[Risk Factor Monitoring and Methods Branch: Weight, Height & Related Measures](#)
The Risk Factor Monitoring Methods Branch (RFMMB) is part of the Applied Research Program within NCI's Division of Cancer Control and Population Sciences. RFMMB supports research related to improving the assessment and monitoring of population changes in height, weight, body fat distribution, and body composition in national, regional, and at-risk subpopulations in the United States.

[Obesity Research at the National Institutes of Health \(NIH\)](#)
This Web site has information about NIH-supported research to facilitate progress toward obesity prevention and treatment.

[FDA Proposes Action Plan to Confront Nation's Obesity Problem](#)
To help tackle what the Food and Drug Administration (FDA) is calling the "nation's obesity epidemic," the FDA released the final report of its Obesity Working Group March 12, 2004.

Physical Activity

[Questions and Answers: Physical Activity and Cancer](#)
A fact sheet that summarizes research on the potential link between physical activity and cancer risk.

[Health Promotion Research Branch](#)
Part of NCI's Division of Cancer Control and Population Sciences, the Health Promotion Research Branch coordinates research on the behavioral prevention of cancer in the areas of physical activity, energy balance, and diet, and leads efforts to develop measurement techniques in these research areas.

[Risk Factor Monitoring and Methods Branch: Physical Activity](#)

<http://www.cancer.gov/cancertopics/energybalance> (1 of 30/2/2005 9:22:14 AM)

The Risk Factor Monitoring and Methods Branch (RFMMB) is part of the Applied Research Program within NCI's Division of Cancer Control and Population Sciences. This Web site provides information about monitoring and assessing physical activity within national, regional, and at-risk subpopulations in the United States. Accurate assessment of physical activity is important to understanding the relationship between physical activity and cancer.

[Cancer Control PLANET: Physical Activity](#)

Physical Activity: 5 Steps to Effective Cancer Control Planning.

[HHS: smallstep.gov](#)

Small steps to better health, including dietary and physical activity changes.

[CDC: Nutrition & Physical Activity](#)

Physical activity and good nutrition are key factors in leading a healthy lifestyle and reducing chronic illnesses.

Diet

[5 A Day Web Site](#)

The national 5 A Day for Better Health Program gives Americans a simple, positive message: Eat 5 or more servings of fruits and vegetables every day for better health.

[Analytic Epidemiology Research Branch](#)

Part of the Epidemiology and Genetics Research Program within NCI's Division of Cancer Control and Population Sciences, the Analytic Epidemiology Research Branch leads and supports research to study determinants of cancer susceptibility and risk. One area of research focuses on diet and nutrition and cancer.

[Lifestyle and Preventing Cancer](#)

Information from NCI's Division of Cancer Prevention about how a number of lifestyle factors, such as diet, food, nutrition, smoking, and other factors, influence cancer risk.

[Health Promotion Research Branch](#)

Part of NCI's Division of Cancer Control and Population Sciences, the Health Promotion Research Branch coordinates research on the behavioral prevention of cancer in the areas of physical activity, energy balance, and diet, and leads efforts to develop measurement techniques in these research areas.

[Nutritional Epidemiology Branch](#)

Part of NCI's Division of Cancer Epidemiology and Genetics, the Nutritional Epidemiology Branch conducts independent and collaborative research on the role of diet and nutritional status in the development of cancer.

[Nutritional Sciences Research Group](#)

Part of NCI's Division of Cancer Prevention, the Nutritional Sciences Research Group plans, develops, directs, and coordinates research programs in diet, nutrition, and cancer related to cancer prevention.

[Risk Factor Monitoring and Methods Branch: Dietary Intakes](#)

The Risk Factor Monitoring and Methods Branch is part of the Applied Research Program within NCI's Division of Cancer Control and Population Sciences (DCCPS). This Web site provides information about dietary research conducted within DCCPS. Validated dietary assessment tools, including short dietary assessment instruments and food frequency questionnaires, are also available.

[Cancer Control PLANET: Diet](#)

Diet: 5 Steps to Effective Cancer Control Planning.

[Cancer Control PLANET: Diet/Nutrition](#)

Diet/Nutrition: 5 Steps to Effective Cancer Control Planning.

[HHS: smallstep.gov](#)

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NCI Synthesis and Dissemination

▶ Cancer Control Planet

▶ <http://cancercontrolplanet.cancer.gov>

▶ NCI fact sheets

▶ Obesity

http://cis.nci.nih.gov/fact/3_70.htm

▶ Physical activity

<http://www.cancer.gov/newscenter/pressreleases/PhysicalActivity>