

# **Practice-Based Research in Dietetics**

**Input from the dietetic workplace**

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# Objectives

- **To provide a framework for the evaluation of dietetic practice as a setting for qualitative and quantitative research**
- **To demonstrate the value of using your dietetic practice to create a prospective research setting**

# **Dietetic practice patterns**

- **Evolve slowly over time**
- **Are unique to each dietitian**
- **Change by global setting**
- **Differ by population and disease state**
- **Provide an opportunity to collect data as part of your practice**

# Research settings

- **Large cohort studies often use food frequency questionnaires assuming patterns of intake (Group-based)**
- **Smaller studies on a single group provide very detailed information of true pattern of intake (Practice-based)**

# **Fact**

- **Each day we practice our talents and skills but we seldom take the time to document what we do**

# **Fact**

- **We need to document our practice in order to charge for our services and provide value to our profession**

# Goals

- **To create a system to collect data on what we do in our practice**
- **To link the practice patterns to outcome**
- **To publish evidence-based research based to demonstrate “best practice”**

# **Nutrition Care Process**

- **Nutrition assessment**
- **Nutrition diagnosis**
- **Nutrition intervention**
- **Nutrition monitoring and evaluation**

# Nutrition Care Process

- **Using standardized language, we can track our activities over time by grouping them in one of the four categories**
- **Able to code our activities**
- **Able to sort our practice patterns**

# Prospective

- **You must plan ahead to decide what information to collect**
- **You must develop a system to save this data**
- **Research is similar but different compared to standard of care**

# Research vs Standard of Care

- **Standard of care: minimal acceptable level of care that is expected or required (legal requirements, laws)**
- **No research hypothesis**
- **Represents practice**

# Research vs Standard of Care

- **Has a research hypothesis**
- **May require institution research approval**
- **Usually prospective (cause-effect)**
- **Can be retrospective (observational, cannot be applied to other settings)**
- **Intervention dependent on study design**

# Qualitative Research

- **A naturalistic approach that seeks to understand practice in uncontrolled, context-specific setting**
- **Goal to understand what is really happening naturally rather than planned**

# Qualitative Question

- **A program for weight loss is very effective during the first six weeks of group sessions**
- **The same program, when continued in the home setting, is no longer effective**
- **What happened?**

# Qualitative Research

- **Collects a wide-variety of data on a smaller group of subjects**
- **The data is then sorted to understand what relationships are present**
- **The influence of practice pattern on the data can be accessed**

# Qualitative Research

- **Must describe the setting in detail**
- **Seeks to connect the problem observed with an observable cause**
- **May not have an intervention**
- **Often identifies barriers that can be overcome in subsequent research**

# Research decisions

- **Methodology**
- **Data collection strategy**
- **Sampling method**
- **Data sources and collection**
- **Data analysis**

# Data?

- **Shelf inventory survey: foods in the home**
- **Home visit: observe cooking and meal preparation**
- **Pictures: cell phone, digital cameras to “see” what and when is eaten**

# Quality vs Quantity

- **Quantitative research is complementary**
- **You can combine both in a single study with planning**

# Qualitative Research

- **Collect data on the 20 consecutive patients who came for weight loss counseling**
- **Enter the data; sort by weight loss (% change, total amount, gender, etc)**

# Qualitative Research

- **Seek to understand why some patients lost weight, some patients gained weight, some patients maintained weight**
- **Look for reasons why success was different---then apply this knowledge to new patient populations to see if successful**

# Qualitative Research Statistics

- **Tend to use more descriptive statistics (frequency, percentage, mean, median) to examine trends**
- **The data drives the findings rather than the hypothesis driving the study**

# Have you read?

- **A introduction to qualitative research for food and nutrition professionals**
- **January 2009 J Am Diet Assoc**
- **Harris JE, Gleason PM, Sheean PM, Coushey C, Beto JA, Bruemmer B.**

# Think about relationships

- What are you doing in your practice that might direct intervention?

# **Example: Sodium and Hypertension**

- **Paleolithic Man Diet**
  - Potassium to Sodium ratio 16:1**
  - No hypertension**
- **Current diet**
  - Sodium to Potassium Ratio 2:1**

**Eaton NEJM 312:283-289:1985**

**Tobian Hypertension 6(S4):S12-S24:1988**

# Estimated Diet of Late Paleolithic Humans vs That of Contemporary Americans

<b>Nutrient</b>	<b>Late Paleolithic Diet (Assuming 35% Meat)</b>	<b>Current American Diet</b>
<b>Total dietary energy, %</b>		
<b>Protein</b>	<b>30</b>	<b>12</b>
<b>Carbohydrate</b>	<b>45-50</b>	<b>46</b>
<b>Fat</b>	<b>20-25</b>	<b>42</b>
<b>Polyunsaturated-saturated fat ratio</b>	<b>1.41</b>	<b>0.44</b>
<b>Fiber, g/day</b>	<b>86</b>	<b>10-20</b>
<b>Sodium, mg</b>	<b>604</b>	<b>3400</b>
<b>Potassium, mg</b>	<b>6970</b>	<b>2400</b>
<b>Potassium-sodium ratio</b>	<b>12:1</b>	<b>0.7:1</b>
<b>Calcium, mg</b>	<b>1520</b>	<b>740</b>

# **Practice research statement**

- **Does the amount of dietary sodium and potassium affect blood pressure?**

# Action

- **Nutrition assessment**
- **Collect data on sodium and potassium intake**
- **Collect blood pressure data**
- **Analyze difference between groups**

# **The Dietary Approach to Stop Hypertension (DASH) Diet**

- **Diet is low salt, high potassium, low fat, high fiber**
- **Reduces blood pressure levels**
- **Lowering salt from:**
  - **150 to 100 mmol/day**  
**decrease in SBP of 2.1 mm Hg (P = 0.001)**
  - **100 to 50 mmol/day**  
**further decrease in SBP of 4.6 mm Hg**

**Latest study postulated a DASH diet quality index**

**Appel NEJM 336:1117-1124:1997**

**Sacks NEJM 344:3-10:2001**

# Think about outcomes

- What are you doing in your practice that links to outcomes of mortality or morbidity?

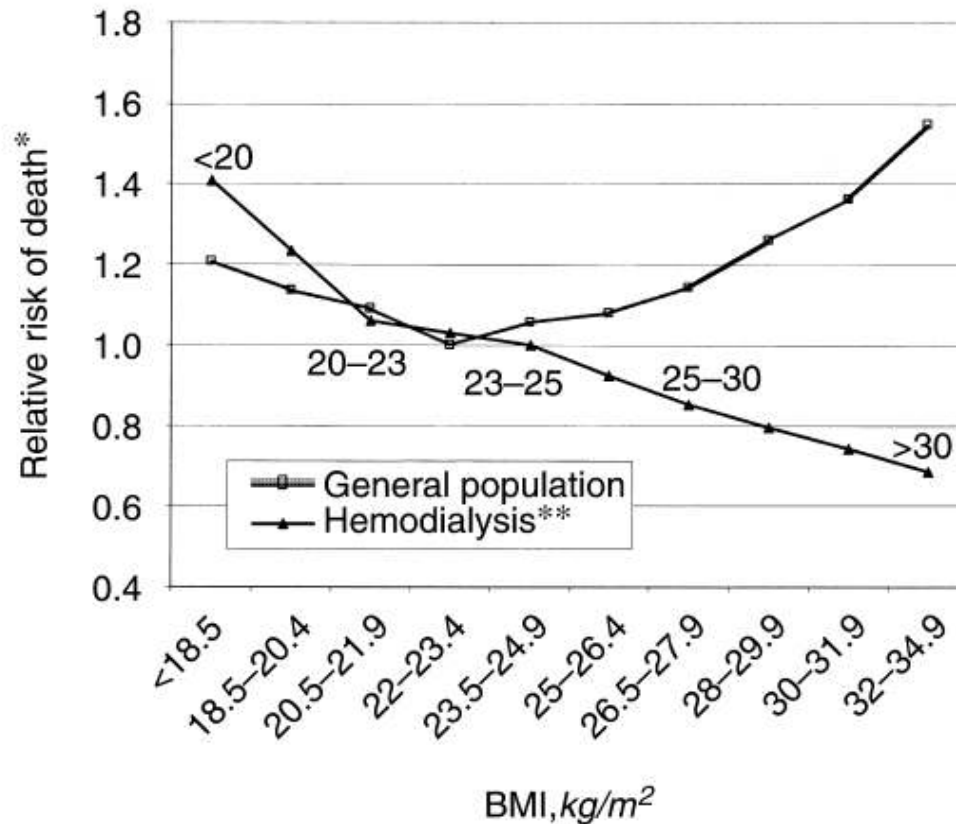
# Common Serial Nutrition Indicators

Nutritional Indicator	Assessment Frequency
Serum albumin	Monthly
% change body weight	Monthly
% change standard body mass (NHANES II)	Quarterly
Subjective global assessment	Quarterly
nPNA (nPCR)	Quarterly

**K/DOQI Nutrition 2000**

# Practice research statement

- **Why do some patients have higher serum albumins than others?**
- **Why do some patients weigh different than others?**
- **Why do some patients live longer than others?**



**Fig. 1. Reverse epidemiology of mortality risk factors in maintenance dialysis patients.** Comparison between the impacts of body mass index (BMI) on all-cause mortality in the general population versus the maintenance hemodialysis population. The general population data are adopted from Calle et al, *N Engl J Med* 341:1097-1105, 1991 (combined men and women, healthy, nonsmoker) [136]. The hemodialysis data are adopted from Leavey et al, *Nephrol Dial Transplant* 16:2386-2394, 2001 (combined data from the United States and Europe) [26]. \*Each population has a different follow-up period: 14 years for the general population versus 4 years for hemodialysis patients. \*\*BMI stratifications are different in two populations: X-axis is based on the original graph of the general population and the original hemodialysis BMI subgroup ranges are printed additionally along the hemodialysis curve.

From Kalantar-Zadeh  
 KI 63:794 , 2003

# Typical Body Stores

CARBOHYDRATE	PROTEIN	FAT
300-400 g	6-7 kg	10-15 kg
Glycogen	Muscle	Triacylglycerol
<b>1500 kcal</b>	<b>25,000 kcal</b>	<b>125,000 kcal</b>

**Adipose = 15 kg \* 2.2 lb/kg \* 454 g/lb \* 9kcal/g = > 125,000 kcal**

**Cahill NEJM 1970**

# Action

- **Large database shows trend of weight patterns and mortality**
- **Now we must use qualitative to understand other factors**

# Effect of Weight Change

Kalantar-Zadeh

KI 63:794 , 2003

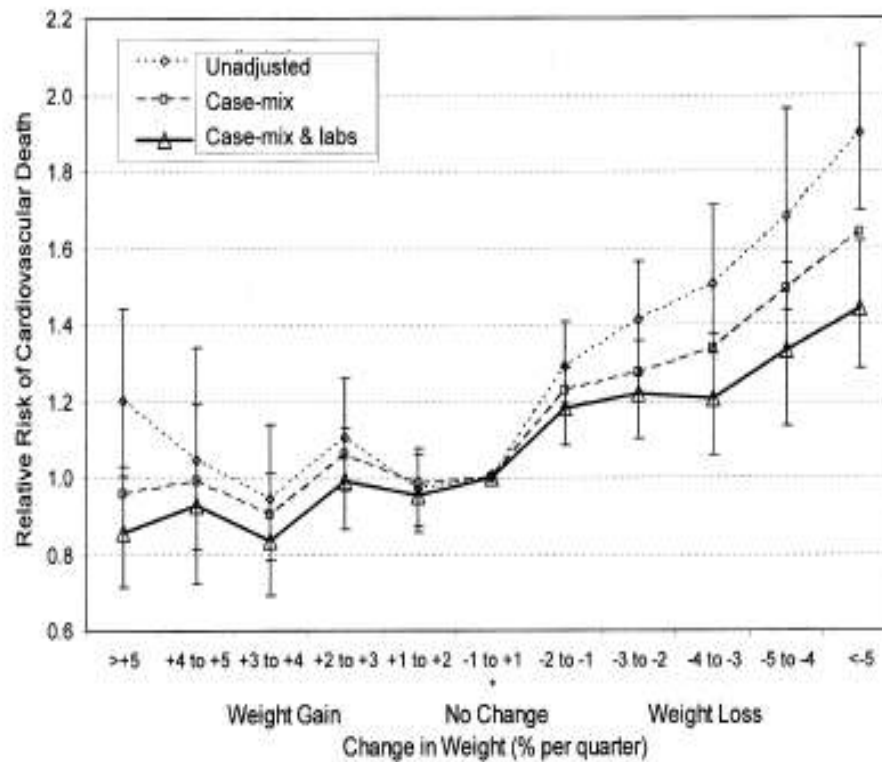


Fig 5. Association between the rate of weight change over time and subsequent cardiovascular mortality in 46,629 MHD patients (95% confidence interval bars are not shown for the case-mix-adjusted group to enable better distinction of the confidence intervals for other 2 groups).

# Quantity vs quality theory

- Quantity Theory: Higher BMI results in decreased risk of death
- Need more information on composition, activity, weight history
- Quality Theory: Higher BMI results in decreased risk of death
- Need more information on religion, stress management, attitudes, coping, specific foods eaten

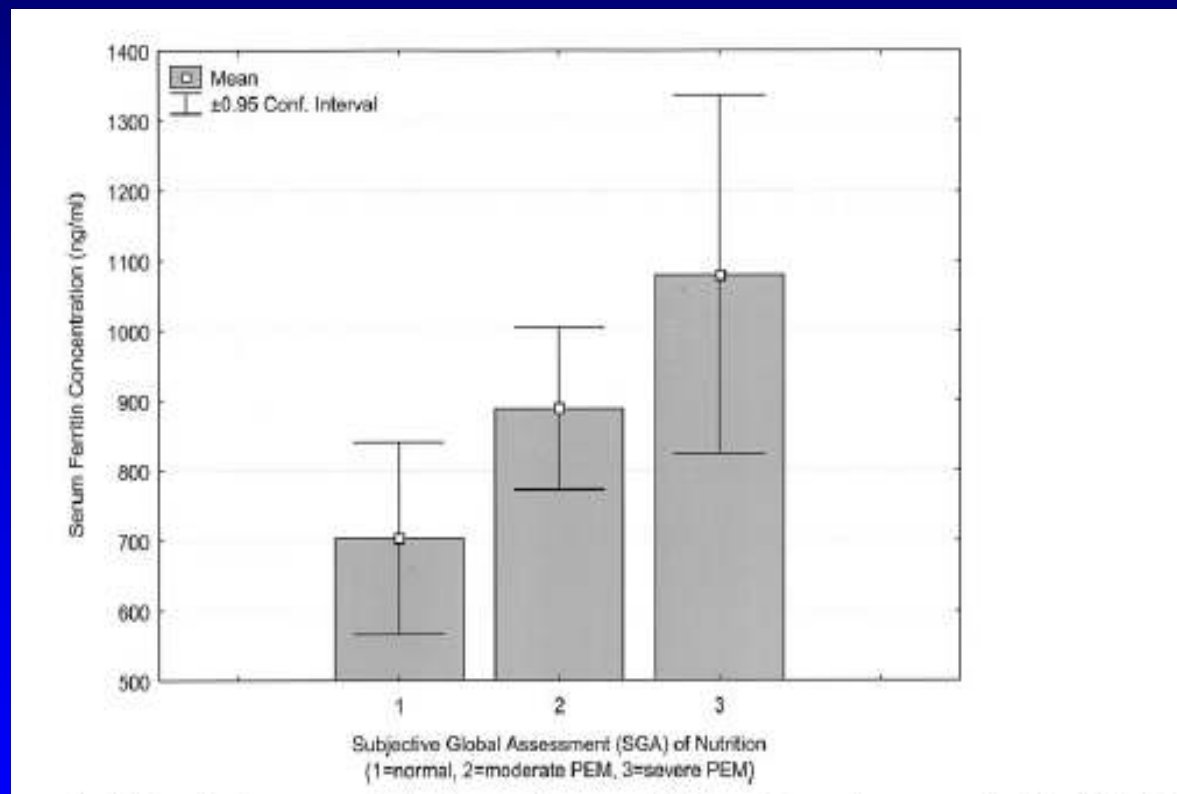
# **Think about practice methods**

- **What are you doing in your practice that might be applied to another area?**

# **Subjective Global Assessment**

- **Focus on visual physical changes (change in weight, diet intake, subcutaneous and muscle mass tissues)**
- **Patient is own control**
- **Subtle differences translate into potential risk**

# Correlation of serum ferritin to SGA



Kaladar-Zadeh NDT 19:141-149, 2004

# Physical Serial Nutrition Indicators

Nutritional Indicator	Comments
Skin integrity	Interdialytic healing
Anthropometrics: Skinfold thickness Mid arm circumference	Patient is own control Skill and consistency of personnel
Waist circumference Waist-to-height ratio	Increase = cardiovascular risk Decrease = adipose tissue
DEXA, bioelectrical impedance	Patient is own control or standards Fluid challenges; personnel skill
Hand grip, walking speed	Patient is own control or standards Muscle mass lower or upper extremity

# **Nutrition-focused physical exam**

- **Subtle changes observed**
- **Correlated to nutritional deficiencies**
- **Eyes, mouth, nail beds, feet, skin**
- **Touching, feeling, looking**

# Importance of Sharing

- **Some pilot studies are not rigorous enough to be published**
- **Information can be shared in other formats to stimulate changes in practice than can be ultimately measured**

# If you want to publish?

- Think ahead early in the process to collect all the important information
- Get help with statistics and study design
- Contact me: [judybeto@dom.edu](mailto:judybeto@dom.edu) to help you in the process

# Conclusion

- **Your natural practice pattern may show evidence-based research for our profession**
- **Share what you are doing in a qualitative and quantitative way**

# Conclusion

- **We need to share our own personal practice patterns with each other**

Thank you!

