Dietetic session

Monitoring of food intake in hospitalized patients: do we need a new tool (OP009)

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Why count calories?

• The ability to estimate the calorie content of meals is important for reducing food intake

• Food and calories journals are a major factor in weight maintenance *

• One of varied therapeutic tools for clinicians for weight management

• Epidemiological research purposes

Patients want to check their energy balance as if they check their “bank account”

“28% try to keep tracking their calories most of the time or every day” *

But...

“Only 9% of people (in the USA) can accurately estimate the number of calories they eat in a day!” *

* International Food Information Council (IFIC) Foundation 2012
What are the common methods to count calories?

1

“Serving size”
Calculating calories item by item
How many calories are (really) in those dishes?
Can the USDA database help us?  NOT SURE

“White rice”  (copy from USDA database)
“Exchange groups”*
What is the proper food exchange groups for every meal?

Common Breakfast

Energy bar

Diner Breakfast

Spanish tapas

Chinese dish
3

The “Categories method”

A new concept for counting daily calories
The “Categories method”

The concept - one categorical score per meal
1. Each category represents the TOTAL calories consumed in a meal
2. Display the average value of the category
3. Sum up the total daily calorie intake.

<table>
<thead>
<tr>
<th>Category</th>
<th>Caloric Range of a meal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Less than 200</td>
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<tr>
<td>2</td>
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</tbody>
</table>
Example #1

Which category is most suitable for this breakfast?
A cup of coffee with cream and glazed donut

Correct.
The right answer is category No. 2

<table>
<thead>
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<tr>
<td>1</td>
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Example #2

Which category is most suitable for an apple?

Correct. The right answer is category no.1
Example #3

Which category is most suitable for this lunch?
Grilled Chicken breast with side of rice and beans

Correct.
The right answer is category No.3

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Example #4

Which category is most suitable for this lunch?
Spanish tapas

Correct.
The right answer is category No.5
Objective:
To evaluate the validity of self-caloric evaluation, the “Categories method“ with the 24 hours diary recall

Design:
Cross-sectional study

Participants:
Members and employees of “Maccabi Healthcare Services” (A Health Maintenance Organization, HMO)
Inclusion Criteria:
Age: 21-65
Body mass index (BMI): between 20-45 kg/m²

Exclusion Criteria:
Clinical dietitians / Nutritionists
Research protocol

Part 1 -

Face to face 24 hours recall on 1 occasion by 2 well trained interviewers (30-40 minutes)

Using USDA “4 stages” interview method*:

1. Quick review of the meals
2. Food items that may be forgotten
3. Time and place of each meal
4. Assessment of food quantities and dimensions using photographs published by the Israeli Ministry of Health

* Moshfegh AJ. Am J Clin Nutr 2008
Assessment of food quantities and dimensions
published by the Israeli Ministry of Health
• Calories content were obtained from the Israeli’s Ministry of Health software called “Tzameret”
Part 2 -

Participants were asked to estimate the calorie category of each meal by the “Categories method” (5 minutes)

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Part 3 - Self-completion questionnaire (5 minutes)

- Anthropometry values - height and weight
- Age and gender
- Education
- Previous experience in weight loss
- Level of knowledge on calorie content
• The study received ethical approval from the Assuta Hospital Systems ethics committee, Tel-Aviv.

• ClinicalTrials.gov identifier: NIH #NCT01408784
Results

Characteristics of participants:

<table>
<thead>
<tr>
<th></th>
<th>N=29</th>
<th>Mean ± SD</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>27f, 2m</td>
<td>44.2±11.4</td>
<td>23-63</td>
</tr>
<tr>
<td>Age</td>
<td>25.9±8.7</td>
<td>20-45</td>
<td></td>
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</table>
A self-report of knowledge level on calories content

Number of subjects

Level of knowledge

Number of subjects

low | medium | high | very high

low | medium | high | very high

0   | 10     | 4    | 2
The actual total daily calories intake and self-estimate by the "categories method" wasn’t significantly different.

- **Mean ± SD**
  - **Actual calories**: 1584 ± 556
  - **Categories method**: 1671 ± 600
  - **T-test**: N.S. (p>0.05)
The correlation between methods was high ($r=0.73$, $p<0.05$).
The difference between the “Categories method” and the “Traditional method“

\[ \Delta \text{Total daily calories} = \left( \text{"Categories"} - \text{actual} \right), (\%) \]
### Actual vs. estimated calories intake per meal

<table>
<thead>
<tr>
<th></th>
<th>n=167 meals</th>
<th>Mean ± SD</th>
<th>Range (kcal)</th>
<th>T-test</th>
<th>Pearson correlation</th>
</tr>
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<tbody>
<tr>
<td>Actual calories</td>
<td></td>
<td>291 ± 277</td>
<td>41-1898</td>
<td>N.S. (p&gt;0.05)</td>
<td>r=0.85 (p&lt;0.001)</td>
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<tr>
<td>Estimated calories</td>
<td></td>
<td>295 ± 263</td>
<td>100-1500</td>
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1. The percentage agreement between self-estimation (“categories method”) and 24h recall was 81.5%.

2. As expected*, participants tend to underestimate rather than overestimate calories content of a meal by choosing a lower category level.

Conclusions

• The “categories method” might be a reliable and accurate method for counting calories

• It makes it easier to track any given meal even to those who are not so familiar with the caloric value of a product
Implications of the “categories method”

• Encourages patients to track their daily energy intake in a fast (5 min), practical and non-obsessive way

• Therapeutic tool for clinicians, dietitians, health professionals etc.

• Even those that are not familiar with the “world of calories” can easily use the method

• May be efficient tool for epidemiology research
Limitations of the “Categories method”

• Assimilation of a new language
• Requires some knowledge in the "caloric world"
• Additional evaluation is still needed
• Lack of additional nutrition intake data i.e. Nutrients/vitamins etc.
Excel file and the Poster (PP221-MONDAY) can be downloaded through my LinkedIn: “Tzachi KNAAN”

Thank you
Example

Which category is most suitable for this lunch?
Chicken wrap with side of French fries

Correct.
The right answer is category No.3
Example #4

Which category is most suitable for chicken pot pie with creamed spinach?

Correct.
The right answer is category no.4
Example #5

Which category is most suitable for this Dinner?
Mixed salad with ranch dressing, pasta with shrimp & scallops and vanilla ice cream

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Correct.
The right answer is category No.5
Example #6

Which category is most suitable for half a pint of draft Beer and a handful of pretzels?

Correct.
The right answer is category no.2