Nutritional quality in catering canteens: the Nutrient Analysis Critical Control Points process

Local Health Agency of Trieste integrated with Trieste University - Faculty of Medicine
The Department of Prevention - Food and nutrition hygiene service
and
Trieste University
Faculty of Economics* - Faculty of Pharmacological Sciences**

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Ensuring the wider availability of minimally processed foods through short supply chains has the potential to contribute significantly to creating healthy and sustainable food systems.

WHO – Food and Nutrition Action Plan 2015 – 2020

OBJECTIVE 2 - To Promote the life long benefits of a healthy diet, Adopt tools and strategies to address the special nutrition needs of vulnerable groups, including older people...

The concluding remarks of “The role of nutrition in active and healthy ageing” by JRC state that the way to ensure proper nutrition in older people is to maximise their intake of essential vitamins, minerals and bioactive compounds from natural food sources.
The malnutrition of institutionalized and fragile elderly in Italy

2° challenge
“Multidimensional investigation of catering services for senior citizens in the region Friuli Venezia Giulia”

The survey investigated:
1. the general context of structures
2. the organizational characteristics of catering services
3. personal services
4. dietary conditions
5. the quality of food supplies
6. and hygienic food safety
Nursing Homes n 189  (n=50, 26%)

Residents n 10918  (n=3774, 35%)
area of quality food supplies: FRESH / PROCESSED FOODS

(n= 40 )

Institutions:
- > 70% fresh vegetables
- > 90% olive oil extra
- > 90% fresh milk
- > 90% fresh meat
- > 70% processed vegetables
area of quality food supplies: PROTEIN OF ANIMAL ORIGIN

Average provisions grams per week/residents protein from fish, meat, cheese, egg, cured meat (LARN 172g) (n= 40)
area of quality food supplies: OIL

Average provisions grams per day/residents, (LARN: 35 g)  
(n= 40 )
area of quality food supplies: FRUITS

Average provisions grams per day/residents to net waste, (LARN: 300 g)  (n= 40 )

grams

fresh fruits  
fruits puee  
homog fruits  
canned fruits
area of quality food supplies: VEGETABLES

Average provisions grams per day/residents to net waste, (LARN: 360 g) (n= 40 )
Minimum daily intake of polyphenols at least 150 – 200 mg/day

analytical results: POLYPHENOLS content per portion (mg/por)
analytical results: VITAMIN C content (mg/100 g)
analytical results: FAT CONTENT – OXIDATION INDEX

<table>
<thead>
<tr>
<th></th>
<th>FAT %</th>
<th>reference values</th>
<th>PAV (&lt; 5)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>FAT %</td>
<td>FAT % (INRAN)</td>
<td></td>
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<tr>
<td>mixed frozen meat</td>
<td>45,5</td>
<td>-</td>
<td>10,8</td>
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<tr>
<td>beef / pork</td>
<td></td>
<td></td>
<td></td>
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<tr>
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<td>14,02</td>
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<td>14,02</td>
<td>7,802</td>
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<tr>
<td>Wurstel</td>
<td>22,41</td>
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<td>5,36</td>
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<tr>
<td>chicken breast</td>
<td>3,07</td>
<td>6,63</td>
<td>0,31</td>
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<tr>
<td>Chicken nuggets</td>
<td>22,10</td>
<td>18,04</td>
<td>14,34</td>
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</table>
The concluding remarks of “Multidimensional investigation of catering services for senior citizens in the region Friuli Venezia Giulia” state that:

• The sum of the polyphenols potentially assumable with meals, per individual, hardly reaches 150 - 200 mg / day

• This type of nutrition, while satisfying energy needs, is not sufficiently useful to protect the elderly from oxidative stress
development of the Nutrient Analysis Critical Control Points process in welfare canteen
1. The measure of prevention of damage to nutrients coincides with the indications for food safety reported among the prerequisite programs in the “Manual of correct operating practices for collective catering” compiled by Angem and Legacoop and approved by the Ministry of Health.

2. State – Regions Agreement, “Assessment of national criticalities in nutrition and intervention strategies 2016 – 2019”...promoting and encouraging the adoption of the NACCP process in local prevention structures to promote food and nutrition policies...
HACCP

1. conduct a hazards analysis
2. determine the Critical Control Points
3. establish critical limits
4. establish monitoring procedures
5. establish corrective actions
6. establish verification procedures
7. establish record-keeping and documentation procedures

NACCP

- physical, chemical or biological hazard
- loss of nutrients in the supply chain

Main steps

1. receiving
2. storage
3. preparation - cooking
4. distribution

Good Nutritional Practices
Total quality management and effectiveness procedures

- CCP
- Critical limits
- Monitoring CCP
- Corrective actions
- Applying the system
step 1 – receiving delivery: FRESH VEGETABLES

Average provisions grams per day/residents to net waste, (LARN: 360 g)  \( (n = 40) \)
step 3 - preparation / cooking  17TS NURSING HOME: DINNER

Hours of cooking and hot holding (+90 °C)

- Loss of antiradical power
  -70%
  -15%

<table>
<thead>
<tr>
<th>Item</th>
<th>Hours</th>
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<tr>
<td>Cooked vegetables</td>
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<tr>
<td>Soup</td>
<td>3.5</td>
</tr>
<tr>
<td>(Beef) Broth</td>
<td>4.5</td>
</tr>
<tr>
<td>Meat Sauce</td>
<td>5.0</td>
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<tr>
<td>Boiled Chicken</td>
<td>3.0</td>
</tr>
<tr>
<td>Fish</td>
<td>2.0</td>
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</table>
step 3 - preparation / cooking 17TS NURSING HOME

Hours of hot holding (+90 °C): dinner % LOSS OF ANTIRADICALIC POWER

- Homogenized cooked fruits: 26.7
- Homogenized cooked vegetables: 47.4
- Cooked vegetables: 55.6
- Boiled spinach: 45.7
- Beans Soup: 33.9
step 3 - preparation / cooking  17TS NURSING HOME

Hours of hot holding (+90 °C): dinner % LOSS OF POLYPHENOL CONTENT (mg/100 g)

- Homogenized cooked fruits  73,9
- Homogenized cooked vegetables  17,6
- Cooked vegetables  31,6
- Boiled spinach  72,0
- Beans Soup  62,8
step 3 - preparation / cooking  17TS NURSING HOME

Hours of hot holding (+90 °C): dinner % LOSS OF ASCORBIC ACID CONTENT (mg/100 g)

- Homogenized cooked fruits: 36.3 mg
- Homogenized cooked vegetables: 85.9 mg
- Cooked vegetables: 58.3 mg
- Boiled spinach: 80.0 mg
- Beans Soup: 80.9 mg
new criteria introduced into public tenders to guarantee the total nutritional quality of meals

- monitoring the antiradical power of the meals served to residents
- defining the production program of the 4 main flow process steps
- adequacy of production premises
- appropriate instrumental equipment
- **workload**
- professional qualifications of the workforce
- nutritional training
CRITERIA: defining the production program of the 4 main steps
step 3 cooking - hot holding DINNER
CRITERIA: defining the production program of the 4 main steps

step 3 cooking - hot holding DINNER

Cooked Vegetables
Soup
(Beef) Broth
Meat Sauce
Tomato Sauce
Steak
Fried food
Boiled Chicken
Fish

Serie2
Serie3
CRITERIA: workload
step 3 cooking - hot holding **DINNER**

[Bar chart showing work shifts from 6:00 to 18:57, with two major peaks indicating increased workload during dinner time.]
CRITERIA: workload
step 3 cooking - hot holding DINNER
Application of the Nutrient Analysis Critical Control Points process in catering canteens
Table 1.1 – People of 3 years of age and over: eating habits and age group– LUNCH

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Home</th>
<th>Catering Services</th>
<th>Restaurant</th>
<th>Bar</th>
<th>Work Place</th>
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<tr>
<td>75 e più</td>
<td>96.3</td>
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<td>65-74</td>
<td>95.1</td>
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<tr>
<td>60-64</td>
<td>89.7</td>
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<tr>
<td>55-59</td>
<td>75.1</td>
<td>4.8</td>
<td>3.1</td>
<td>2.9</td>
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<tr>
<td>45-54</td>
<td>66.4</td>
<td>6.6</td>
<td>5.1</td>
<td>3.9</td>
<td>12.2</td>
</tr>
<tr>
<td>35-44</td>
<td>61.1</td>
<td>7.4</td>
<td>5.5</td>
<td>4.3</td>
<td>14.5</td>
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<tr>
<td>25-34</td>
<td>64.6</td>
<td>6.2</td>
<td>4.9</td>
<td>4.5</td>
<td>13.7</td>
</tr>
<tr>
<td>20-24</td>
<td>69.6</td>
<td>8.4</td>
<td>2.5</td>
<td>5.2</td>
<td>6.4</td>
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<tr>
<td>18-19</td>
<td>83.7</td>
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<td>0.8</td>
<td>1.1</td>
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<tr>
<td>15-17</td>
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<tr>
<td>11-14</td>
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<td>8.2</td>
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<tr>
<td>6-10</td>
<td>60.2</td>
<td>34.8</td>
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<tr>
<td>3-5</td>
<td>37.5</td>
<td>57.3</td>
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<td>0.0</td>
<td>0.0</td>
</tr>
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</table>
new procedure to provide the service **Level of Essential Assistance F6:**

Consultarci for the Procurement Procedure to catering services (CPP) provided by the National Health System
The flow chart of **LEA F6**: Consultancy for the procurement procedure to catering services.
The Principles of Sustainable Public Procurement

A significant achievement of the SPP Programme is the adoption by the Multistakeholder Advisory Committee of the Sustainable Public Procurement Principles, which were publicly released in March 2015. To learn more about the Principles of Sustainable Public Procurement, click here.

Latest news

OUR 100TH MEMBER

The 10YFP Sustainable Public Procurement Programme is proud to welcome its 100th partner, the European Environmental Bureau. The European Environmental Bureau has joined our network of governments, international organisations, NGOs and experts, working together to enhance the implementation of sustainable public procurement.
Thank you