Food Habits and Knowledge Related with Meat on a Sample of Portuguese Consumers

Raquel P. F. Guiné
Anabela Gonçalves
Edite T. Lemos
Meat is one of the most consumed food products by the Portuguese population (National Statistics - INE):

- Meat consumption in 2019 was 119.1 kg/inhabitant
- Poultry was the most consumed, followed by pork.
- Beef sheep and goat have less expression on the Portuguese market.

The Portuguese Health Board (DGS) recommends a weekly ingestion of red meat up to 500 g (about 70 g per day), because when in excess it can increase the risk of colon cancer.

Excessive consumption of red meat is directly related to the environment, and there is an increasing concern to reduce these impacts.
Nutritional value of meat

- Meat contains proteins, lipids, water, vitamins and minerals, but the composition varies according to the type of animal and production conditions, such as feed.

- Meat contains proteins of high biological value, having a large amount of essential amino acids, supplying about 50% of the human being’s daily protein needs.

- White meat has a lower fat content as compared to red meat. The main lipids present in chicken are unsaturated fatty acids, around 67.3%, while in sheep meat the saturated lipids are around 57.7%.

- Meat has vitamins of B complex, while vitamins A and D are found in higher amounts in the liver.

- Meat is rich in minerals, phosphorus and potassium also containing trace elements such as iron and zinc.
Objective

This study aimed at investigating the meat consumption habits and knowledge about some facts related with meat consumption and production, namely the effects for human health and for the environment.

Methodology

- Questionnaire survey (on-line platform)
- Data collection between March and May 2020.
- Only adult Portuguese participants were included
- Ethical approval (ref. 12SUB2020)
- Data treatment – Excel 2016
Sample characterization

<table>
<thead>
<tr>
<th>Group</th>
<th>Age (years) M ± SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Women</td>
<td>37 ± 17</td>
</tr>
<tr>
<td>Men</td>
<td>42 ± 16</td>
</tr>
<tr>
<td>Global sample</td>
<td>39 ± 17</td>
</tr>
</tbody>
</table>
Results – Shopping practices

Who makes family food shopping:
- Myself: 51%
- My partner: 25%
- Both spouses: 18%
- Other person: 6%

How often do you shop for food?
- 2-3 times/week: 10%
- Once/week: 25%
- Fortnightly: 62%
- Monthly: 3%

Where do you buy meet?
- Butcher: 49%
- Supermarket: 50%
- Small shops: 1%
Attributes more valued when purchasing meat

- Other: 3% Yes, 97% No
- Fat: 32% Yes, 68% No
- Texture: 10% Yes, 90% No
- Colour: 38% Yes, 63% No
- Aspect: 71% Yes, 29% No
- Price: 31% Yes, 69% No
# Results – Preferences

<table>
<thead>
<tr>
<th></th>
<th>Totally dislike</th>
<th>Like very little</th>
<th>Like little</th>
<th>Like much</th>
<th>Like very much</th>
<th>Never tasted</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Beef</strong></td>
<td>7%</td>
<td>7%</td>
<td>19%</td>
<td>51%</td>
<td>16%</td>
<td>0</td>
</tr>
<tr>
<td><strong>Pork</strong></td>
<td>9%</td>
<td>6%</td>
<td>15%</td>
<td>52%</td>
<td>18%</td>
<td>0</td>
</tr>
<tr>
<td><strong>Chicken</strong></td>
<td>0</td>
<td>1%</td>
<td>7%</td>
<td>59%</td>
<td>33%</td>
<td>0</td>
</tr>
<tr>
<td><strong>Turkey</strong></td>
<td>5%</td>
<td>5%</td>
<td>12%</td>
<td>49%</td>
<td>27%</td>
<td>1%</td>
</tr>
<tr>
<td><strong>Sheep</strong></td>
<td>35%</td>
<td>9%</td>
<td>17%</td>
<td>31%</td>
<td>6%</td>
<td>2%</td>
</tr>
<tr>
<td><strong>Goat</strong></td>
<td>37%</td>
<td>7%</td>
<td>16%</td>
<td>33%</td>
<td>4%</td>
<td>3%</td>
</tr>
<tr>
<td><strong>Rabbit</strong></td>
<td>33%</td>
<td>9%</td>
<td>22%</td>
<td>25%</td>
<td>9%</td>
<td>1%</td>
</tr>
<tr>
<td><strong>Horse</strong></td>
<td>41%</td>
<td>3%</td>
<td>5%</td>
<td>5%</td>
<td>2%</td>
<td>43%</td>
</tr>
<tr>
<td><strong>Boar</strong></td>
<td>31%</td>
<td>3%</td>
<td>11%</td>
<td>28%</td>
<td>8%</td>
<td>19%</td>
</tr>
</tbody>
</table>
## Results – Consumption

### Weekly meat consumption

<table>
<thead>
<tr>
<th></th>
<th>Five or more times</th>
<th>Four times</th>
<th>Three times</th>
<th>Twice</th>
<th>Once</th>
<th>Seldom</th>
<th>Never</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beef</td>
<td>0%</td>
<td>3%</td>
<td>9%</td>
<td>23%</td>
<td>28%</td>
<td>27%</td>
<td>8%</td>
</tr>
<tr>
<td>Pork</td>
<td>2%</td>
<td>6%</td>
<td>8%</td>
<td>32%</td>
<td>31%</td>
<td>17%</td>
<td>4%</td>
</tr>
<tr>
<td>Chicken</td>
<td>3%</td>
<td>11%</td>
<td>31%</td>
<td>38%</td>
<td>15%</td>
<td>3%</td>
<td>0%</td>
</tr>
<tr>
<td>Turkey</td>
<td>2%</td>
<td>3%</td>
<td>8%</td>
<td>26%</td>
<td>21%</td>
<td>34%</td>
<td>5%</td>
</tr>
<tr>
<td>Sheep</td>
<td>1%</td>
<td>0%</td>
<td>3%</td>
<td>6%</td>
<td>8%</td>
<td>43%</td>
<td>38%</td>
</tr>
<tr>
<td>Goat</td>
<td>0%</td>
<td>0%</td>
<td>2%</td>
<td>3%</td>
<td>5%</td>
<td>43%</td>
<td>46%</td>
</tr>
<tr>
<td>Rabbit</td>
<td>0%</td>
<td>0%</td>
<td>2%</td>
<td>4%</td>
<td>15%</td>
<td>44%</td>
<td>35%</td>
</tr>
<tr>
<td>Horse</td>
<td>0%</td>
<td>0%</td>
<td>2%</td>
<td>3%</td>
<td>0%</td>
<td>19%</td>
<td>76%</td>
</tr>
<tr>
<td>Boar</td>
<td>0%</td>
<td>0%</td>
<td>2%</td>
<td>3%</td>
<td>1%</td>
<td>41%</td>
<td>53%</td>
</tr>
</tbody>
</table>
Results – Cooking method

- Beef:
  - Grilled: 30%
  - Boiled: 5%
  - Fried: 7%
  - Roasted: 21%
  - Stewed: 37%

- Pork:
  - Grilled: 48%
  - Boiled: 14%
  - Fried: 6%
  - Roasted: 13%
  - Stewed: 20%

- Rabbit:
  - Grilled: 4%
  - Boiled: 12%
  - Fried: 2%
  - Roasted: 31%
  - Stewed: 51%

- Turkey:
  - Grilled: 29%
  - Boiled: 5%
  - Fried: 3%
  - Roasted: 35%
  - Stewed: 12%

- Chicken:
  - Grilled: 38%
  - Boiled: 9%
  - Fried: 10%
  - Roasted: 32%
  - Stewed: 27%

- Sheep:
  - Grilled: 21%
  - Boiled: 7%
  - Fried: 4%
  - Roasted: 37%
  - Stewed: 27%

- Goat:
  - Grilled: 27%
  - Boiled: 12%
  - Fried: 4%
  - Roasted: 41%
  - Stewed: 25%

- Horse:
  - Grilled: 31%
  - Boiled: 4%
  - Fried: 7%
  - Roasted: 18%
  - Stewed: 33%

- Boar:
  - Grilled: 52%
  - Boiled: 3%
  - Fried: 5%
  - Roasted: 18%
  - Stewed: 44%
Opinion about the influence of meat on human health

- No opinion: 7%
- Harmful: 1%
- Beneficial: 12%
- Depends on the amount consumed: 80%
Results – Knowledge

- Cattle production is harmful to the environment: 14% Totally disagree, 33% Disagree, 21% Indifferent, 16% Agree, 16% Totally agree
- The fat content is lower in the chicken skin: 33% Totally disagree, 25% Disagree, 22% Indifferent, 14% Agree, 5% Totally agree
- Pork is harmful to health: 3% Totally disagree, 30% Disagree, 28% Indifferent, 26% Agree, 13% Totally agree
- Red meat contributes to an increase in cholesterol: 2% Totally disagree, 14% Disagree, 13% Indifferent, 51% Agree, 20% Totally agree
- White meat has higher fat content: 14% Totally disagree, 33% Disagree, 40% Indifferent, 13% Agree, 11% Totally agree
- Red meat is richer in protein than white meat: 8% Totally disagree, 25% Disagree, 23% Indifferent, 31% Agree, 13% Totally agree
- The cooking mode can change the composition of the meat: 3% Totally disagree, 13% Disagree, 52% Indifferent, 32% Agree, 32% Totally agree
- White meat is healthier than red meat: 9% Totally disagree, 10% Disagree, 40% Indifferent, 41% Agree, 3% Totally agree
Conclusions

- White meat (chicken and turkey) is more consumed than pork.
- There is a trend to reduce the consumption of red meat.
- The price is not the main factor to take into account when purchasing meat.
- Appearance and color are the main quality attributes valued by consumers.
- People prefer methods that preserve the flavor and eventually contribute to reduce the amount of fat: stew or grill.
- People are informed about meat and the effects on human health and on the environment.
Acknowledgments

The authors acknowledge financial support from the Portuguese Foundation for Science and Technology (FCT) within the scope of the project Refª UIDB/00681/2020. Furthermore, we would like to thank the CERNAS Research Centre and the Polytechnic Institute of Viseu for their support.

Thank You