HEALTHY SHIP

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FOOD HYGIENE ON BOARD SHIPS: SURVEY ANSWERS GROUPED BY RANK/OCCUPATION HELD

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The following analysis reports response rates to the questionnaire based on the rank/occupation held. The analysis focuses particularly on those who work in the galley and messroom since they are the main players of food hygiene on board ships. The questions and response rates of all Finaval S.p.a. staff, grouped according to the occupation they hold, are provided below.

The red columns on the bar graph represent catering and galley staff and reveal that these food operators have a significant lack of knowledge precisely on the subject on which they should be most informed. For example, the graph below shows that only 52% of the catering and galley staff is aware of the fact that food may indeed be responsible for disease transmission, while yet more than 30% did not answer the question, confirming their lack of knowledge on the subject-matter.

<table>
<thead>
<tr>
<th>Question</th>
<th>Correct Answer</th>
<th>Catering and Galley</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do you think that diseases can be transmitted through food?</td>
<td>Yes</td>
<td>52%</td>
</tr>
</tbody>
</table>

The red columns representing catering and galley staff indicate the lowest percentage in correctly answering “yes” to the question and the highest percentage of no-answers.

Overall, the graphs generally reveal that the “catering and galley” group is the least informed about the subject-matter for the majority of the questions, or is certainly not the most informed. We can therefore conclude that the group has little knowledge of the problem and that their perception of risk of disease through food is low.

This fact highlights the need to hire qualified personnel of the food industry on board ships, ie those in possession of the health card, those who have successfully attended courses on food hygiene and can demonstrate their knowledge and familiarity on the subject, in short, specialists. Experience is not necessary but knowledge of the subject-matter is required. It is important that all those who work in food services have training on food hygiene; those who do not possess this knowledge should be placed in the position to study and be acquainted with the subject matter. When hiring, knowledge of food safety should be verified (either through possession of specific documentation or through a small examination - such as answering ad hoc questionnaires). In any case, attending a short vocational course would be appropriate.
Graphs that reveal insufficient knowledge of the subject-matter

Generally speaking, the company’s food service employees have insufficient knowledge of food hygiene. Specifically, the graph below reveals that “catering and galley” is the group that has avoided answering the question more than any other category (that is, 40%). Moreover, most of the catering and galley group have responded "I do not know" to the question, while 16% believe that there aren’t any groups of people who are more at risk than others.

2 - In your opinion, are there groups of people who are most affected by diseases transmitted through food?

Correct answer: yes

There are many cases in which the “catering and galley” group demonstrate a barely sufficient knowledge of the problem. In questions 3 and 12, the percentage of correct responses did not exceed 65%, whereas for some other questions, the percentage of wrong answers was very close or even exceeded that of correct responses.

3 - In your opinion, can food be stored for an unlimited amount of time?

Correct answer: no, all foods have a limited shelf time
4 - Does refrigeration kill all the pathogens that may be present in food?

*no, but it preserves the food so that germs cannot multiply*

5 - At room temperature, the time required for microorganisms present in food to go from relatively few to millions or billions is:

*Correct answer: a few hours*
6 - Are the most common pathogens (ex. Salmonella) killed during the cooking process?  
*true only if the food reaches an internal temperature of 70 °C during the cooking process*

7 - Can germs multiply rapidly in cooked food left at room temperature?  
*Correct answer: true*
8 - Do hazardous foods always have a bad taste and smell?

*Correct answer: not always*

<table>
<thead>
<tr>
<th>Answer</th>
<th>Captain</th>
<th>Catering and Galley</th>
<th>Deck Crew</th>
<th>Deck Officer</th>
<th>Engine Crew</th>
<th>Engine Officer</th>
<th>Administration</th>
<th>Na</th>
</tr>
</thead>
<tbody>
<tr>
<td>False</td>
<td>36,00</td>
<td>44,00</td>
<td>56,00</td>
<td>0,00</td>
<td>0,00</td>
<td>0,00</td>
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<tr>
<td>True</td>
<td>0,00</td>
<td>44,00</td>
<td>56,00</td>
<td>0,00</td>
<td>0,00</td>
<td>0,00</td>
<td>0,00</td>
<td>0,00</td>
</tr>
<tr>
<td>Depends on the type of food</td>
<td>0,00</td>
<td>44,00</td>
<td>56,00</td>
<td>0,00</td>
<td>0,00</td>
<td>0,00</td>
<td>0,00</td>
<td>0,00</td>
</tr>
<tr>
<td>Only true for salmonella</td>
<td>0,00</td>
<td>44,00</td>
<td>56,00</td>
<td>0,00</td>
<td>0,00</td>
<td>0,00</td>
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<td>0,00</td>
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<tr>
<td>Don't know</td>
<td>0,00</td>
<td>44,00</td>
<td>56,00</td>
<td>0,00</td>
<td>0,00</td>
<td>0,00</td>
<td>0,00</td>
<td>0,00</td>
</tr>
<tr>
<td>Na</td>
<td>0,00</td>
<td>44,00</td>
<td>56,00</td>
<td>0,00</td>
<td>0,00</td>
<td>0,00</td>
<td>0,00</td>
<td>0,00</td>
</tr>
</tbody>
</table>

9 - Which material is not suitable for storing food?

*Correct answer: copper*
10 - Cooked foods that are not consumed immediately should be: *cooled rapidly and then placed in the refrigerator*
The answers to question 12 are reason for concern. If 48% of those who handle food refreeze thawed food, it means that chances are that high-risk behaviour is being adopted on board different ships. This situation is worsened by the fact that 12% reported that they do not know how to behave and 4% did not answer the question.

12 - Is it appropriate to refreeze thawed food?  
Correct answer: no, never
Fortunately, the group in question seems to have more knowledge on some topics although a relatively discrete percentage of wrong answers nevertheless remain. In graph numbers 13, 14 and 15, more than 80% of correct answers have been recorded, even reaching the 96% mark in graph number 16.

13 - Foods most favourable to micro-organism multiplication are:
Correct answer: those with the highest water content such as milk, creams, broths

14 - Food gets contaminated with microorganisms mainly through:
the hands that handle the food
15 - Raw food should be stored in the refrigerator or in the cold store separately from cooked food.

*Correct answer: true*
Vegetables should be stored in the refrigerator separately from meat, dairy products and cooked food. Why?

*to prevent the germs on the surface of vegetables from contaminating other foods*

![Bar chart showing reasons for storing vegetables separately in the refrigerator](image)
Graph number 17 reveals that the “catering and galley” group never excels in giving the correct answers when compared to the other groups. The response rate for identifying vomiting and diarrhea as symptoms of foodborne illness is good but the same cannot be said for nausea and headache.

17 – In your opinion, what are the most evident symptoms of foodborne illness?
Correct answer: vomiting, nausea, diarrhea, headache

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Captain</th>
<th>Catering and Galley</th>
<th>Deck Crew</th>
<th>Deck Officer</th>
<th>Engine Crew</th>
<th>Engine Officer</th>
<th>Administration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vomiting</td>
<td>90%</td>
<td>80%</td>
<td>70%</td>
<td>60%</td>
<td>50%</td>
<td>40%</td>
<td>30%</td>
</tr>
<tr>
<td>Nausea</td>
<td>80%</td>
<td>70%</td>
<td>60%</td>
<td>50%</td>
<td>40%</td>
<td>30%</td>
<td>20%</td>
</tr>
<tr>
<td>Diarrhea</td>
<td>90%</td>
<td>80%</td>
<td>70%</td>
<td>60%</td>
<td>50%</td>
<td>40%</td>
<td>30%</td>
</tr>
<tr>
<td>Dizziness</td>
<td>70%</td>
<td>60%</td>
<td>50%</td>
<td>40%</td>
<td>30%</td>
<td>20%</td>
<td>10%</td>
</tr>
<tr>
<td>Headache</td>
<td>60%</td>
<td>50%</td>
<td>40%</td>
<td>30%</td>
<td>20%</td>
<td>10%</td>
<td>0%</td>
</tr>
<tr>
<td>I don’t know</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
</tbody>
</table>
Graphs that reveal poor perception of the subject-matter

The main risk factors of concern for kitchen staff are incorrect food storage temperature (96%) and poor hygiene of the person responsible for food preparation and distribution, that is, themselves (88%). The other factors do not exceed 60%, thereby revealing that there is a limited perception of the risk of contracting diseases from food. In addition, the possibility that food operators may be carriers of pathogens is perceived as being the lowest risk factor (32%). These answers give the sensation that food service staff does not know the reason why a particular behaviour must be adopted during food preparation. Specifically: galley staff recognizes that the behaviour of food operators who do not practice good personal hygiene is a strong risk factor, but does not give the same importance to food operators as being pathogen carriers. It seems that the connection between poor hygiene, presence of pathogens and spread of disease is not so obvious, meaning that the personnel is aware of the right steps that need to be taken such as being clean but does not understand why that is necessary.

Although Graph 18 reveals that the greatest risk for the transmission of food borne illness is considered to be improper storage temperature, 68% of the company’s galley employees do not know that perishable foods made with milk, cream, cream or eggs should be stored at temperatures not exceeding +4 ° C. Only 12% answered this question correctly. These response rates further stand as proof for the hypothesis that staff is aware of the behaviour that needs to be adopted without understanding the reasons why (Figure 19).
19 - At what temperature should perishable foods made from milk, cream, whipping cream or eggs be kept?

*Correct answer: not above +4° C*

Graph 20 shows that the catering and galley staff is one of the groups that attributes the least amount of responsibility to disease spread via food. The poor perception of this danger by those who cook and handle food may lead to inappropriate behaviour in storage and food preparation methods given that one cannot take the necessary measures to avoid hazards when one does not even know that those hazards exist.

20 - Which foods are most responsible for diseases?

*All three answers are correct*
Graphs that reveal the degree of knowledge of the behaviour that needs to be adopted:

When it comes to behaviour that needs to be adopted or to be avoided in order to maintain food wholesome, some attitudes are largely shared by the entire group whereas others are less known. On one hand, these results confirm the fact that the catering and galley staff are familiar with the most common rules of hygiene that need to be met while cooking, but on the other, they strengthen the belief that there is little understanding of the subject matter with regards to more technical questions. For example, 84% of the staff know that leaving food at room temperature for a long time favours the growth of bacteria (a concept widely known by the public), while only 20% know that the same is true when hot food is refrigerated in large pots (more specific notion). The same trend, ie some questions have a great percentage of correct answers, whereas others have a low incidence of correct responses, is repeated in the following graphs:

**21 - Which of the following activities favor the development of germs in food:**
leave the food at room temperature for a long time, refrigerate food in large pots, put cooked food in contact with raw food

The three possible correct answers have very different response rates: 84% for “leave food at room temperature for a long time”, 64% for “put cooked food in contact with raw food”, and only 20% for “refrigerate food in large pots”
22 - How can food contamination be avoided?

*Each method listed below prevents contamination*

<table>
<thead>
<tr>
<th>Method</th>
<th>Captain</th>
<th>Catering and galley</th>
<th>Deck crew</th>
<th>Deck officer</th>
<th>Engine crew</th>
<th>Engine officer</th>
<th>Administration</th>
<th>Na</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal hygiene</td>
<td>82.00</td>
<td>82.00</td>
<td>56.00</td>
<td>56.00</td>
<td>56.00</td>
<td>56.00</td>
<td>56.00</td>
<td></td>
</tr>
<tr>
<td>Environmental hygiene</td>
<td>92.00</td>
<td>92.00</td>
<td>82.00</td>
<td>82.00</td>
<td>82.00</td>
<td>82.00</td>
<td>82.00</td>
<td></td>
</tr>
<tr>
<td>Separate cooked from uncooked foods</td>
<td>56.00</td>
<td>56.00</td>
<td>82.00</td>
<td>82.00</td>
<td>82.00</td>
<td>82.00</td>
<td>82.00</td>
<td></td>
</tr>
<tr>
<td>Separate meat from vegetables</td>
<td>56.00</td>
<td>56.00</td>
<td>82.00</td>
<td>82.00</td>
<td>82.00</td>
<td>82.00</td>
<td>82.00</td>
<td></td>
</tr>
<tr>
<td>Cooking</td>
<td>82.00</td>
<td>82.00</td>
<td>56.00</td>
<td>56.00</td>
<td>56.00</td>
<td>56.00</td>
<td>56.00</td>
<td></td>
</tr>
<tr>
<td>Refrigeration</td>
<td>82.00</td>
<td>82.00</td>
<td>56.00</td>
<td>56.00</td>
<td>56.00</td>
<td>56.00</td>
<td>56.00</td>
<td></td>
</tr>
<tr>
<td>Feeding</td>
<td>82.00</td>
<td>82.00</td>
<td>56.00</td>
<td>56.00</td>
<td>56.00</td>
<td>56.00</td>
<td>56.00</td>
<td></td>
</tr>
<tr>
<td>I don't know</td>
<td>4.00</td>
<td>4.00</td>
<td>4.00</td>
<td>4.00</td>
<td>4.00</td>
<td>4.00</td>
<td>4.00</td>
<td></td>
</tr>
</tbody>
</table>

23 - You must always wash your hands:

*All three answers are correct*
24 - Why is it important to wash your hands before touching food?

*Correct answer: to reduce the risk that the germs present on hands contaminate the food*

Although according to Graph 14, 80% of the catering and galley staff believe that food is mainly contaminated through the hands of those who handle it, frequent manipulation of a dish was considered as a minor factor of contamination by the same respondents in Graph 25. The results of these two graphs are therefore divergent.

25 – Which of the following behavior can contribute to food contamination?
Suggestions on topics to be addressed in the future are reported in the graph below, provided by 29.22% of the entire Finaval sample: