

# ***Holistic approach in the design of public catering for old people: a case study of fish consumption in Italian hospital and elderly care facilities and implications for public food procurement***

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## **Abstract**

The article presents a case study of the introduction of fresh fish, of local species, cooked with the revival of traditional recipes in the canteens of geriatric hospital wards and elderly care facilities of five Italian coastal municipalities.

Fish consumption protects against natural age-related cognitive decline and has been associated with a reduced risk of dementia, Alzheimer's disease and stroke. These recipes have proved popular with elderly people and fish consumption has thereby been increased.

The project "Italian fresh fish in the canteens of healthcare facilities" works to introduce Italian fresh fish, from fishing and aquaculture, into collective public catering services.

Increased purchasing of Italian fresh fish reduces the procurement of intensively fished species, from heavily exploited fisheries outside Italy. The procurement of fresh rather than frozen fish avoids the freezing process along the supply chain which is responsible for a very large expenditure of energy.

The supply of the innovative fish meal was accompanied by a questionnaire survey that involved 500 patients, mainly octogenarians. For these people, mealtime is important not only for its nutritional value, but also for its social and cultural significance. If the food is of good quality, also from the organoleptic point of view, and is prepared according to traditional recipes, beloved by the old patients, it has a profound impact on their physical and mental wellbeing.

## **1 Introduction**

*"As guests of a nursing home, the elderly must be able to lead a normal, active life, according to their personality and health condition. Their usual habits, as well as their usual pace of living, ought to be respected as much as possible."* (Swiss Academy of Medical Sciences, 1988)

In Italy, like in many other Western countries, the population is growing progressively older, with an increase in both lifespan and the share of elderly people compared to the rest of the population. Today, life expectancy at birth is already 80 years of age for men and 85 for women, and this figure has grown by 10 years over the last 40 years. The present dependency ratio, i.e. the ratio of

elderly people and active portion of the population aged 14-65, is equal to 30% and is set to double in the next 50 years (Istat, the Italian national Institute of Statistics, 2011). Consequently, there is also an increase in the number of people staying in nursing homes for extended periods and of patients hospitalised in geriatric wards for long-term care (Istat, 2013).

As the average age of the population rises, conditions of psychophysical and cognitive decline and diseases related to old age become increasingly frequent.

This situation is food for thought on the quality of inter-generational relations as well as on the quality of life of the elderly and of their families in general, and in nursing homes in particular. The objective of public policies is to support the good ageing and autonomy of the elderly as long as possible.

In this regard, the quality of food and of meals in the canteens of healthcare facilities plays a key role, and the consumption of fish is of considerable importance. Its contribution in fighting natural cognitive decline due to ageing and in preventing degenerative diseases such as senile dementia, Alzheimer's disease, and stroke is widely acknowledged (Morris et al., 2005)

The European project LIPIDIET ([lipidiet.eu](http://lipidiet.eu)) highlighted that *early* diet intervention, before Alzheimer's disease develops, plays a key role in boosting memory performance and that dietary changes can prevent senile dementia.

Moreover elderly individuals, and even more those who are hospitalised, tend to eat less because their appetite is reduced and/or they have difficulty swallowing or suffer from conditions affecting their gastro-intestinal system. Due to its digestibility, fish is particularly suitable for the diet of elderly people, but its quality might be jeopardised by the pollution of fishing waters. This is why fish from organic aquaculture is a safe choice, as it is subject to stringent checks. Moreover, appropriate preparation eliminates the risk of fish bones in the dish.

An issue still to be addressed is how to make the recipes more palatable and appealing, in order to stimulate consumption. The government-funded project "Fresh fish in the canteens of healthcare facilities" aims to introduce short-chain fresh fish cooked according to recipes from the local tradition. The focus is on: (i) making the fish more palatable, through the use of certain traditional recipes, thereby increasing consumption among the elderly population, and (ii) improving the sustainability of the whole fish supply chain. This will be done by avoiding intensively fished species, from heavily exploited fisheries outside Italy, as well as avoiding the freezing process, which requires large amounts of energy. Procurement will switch to Italian organic aquaculture thus supporting the economy of small, local fisheries.

## 2 Methodology

Fresh fish from local aquaculture, cooked according to recipes from the regional sea tradition, was served in the public canteens of nursing homes and geriatric hospital wards of five Italian municipalities either along the coast or not far from the sea.

Thanks to its conformation, Italy has a number of regions bordering on the Mediterranean Sea where fishing and aquaculture are well developed. In the inland areas, however, it has spread the farming of trout, of which Italy is one of the leading producers in Europe. This situation could ensure a good supply of fresh and local fish for public canteens, if the critical issues related to the management of the fresh product and its preparation in the kitchens are overcome. In our case study, two different suppliers were chosen among those closest to the canteens for their capacity to provide both certified (organic and Friends of the Sea) and semi-processed (i.e., fillets of fish) products. The technical-organisational, logistic, economic, and managerial aspects of the supply chain were borrowed from similar previous initiatives (see Table 2).

A questionnaire-based investigation complemented the serving of fish dishes. The population involved in the investigation is generally weaker than the rest of the population, due to their old age or their diseased condition, leading to admission to a nursing home or hospitalisation. This is why, to avoid tiring the respondents during administration, the questionnaire was designed to be brief and easily filled in. It included six closed-ended questions (*Yes, No, Maybe*), aimed at investigating: fish consumption habits (Q1); perception of the quality of fresh fish compared to frozen fish (Q2); the importance attached to freshness in canteen consumption (Q3); and appreciation of an innovative fish recipe (Q4-Q6). The questionnaire also contained two open-ended questions aimed at exploring the relationship between the respondents and fish (Q7 – *Could you provide the name of a fish recipe that calls good memories to your mind?*) and their interest in improving the recipe served (Q8 – *Suggestions*).

The questionnaire was printed on a card which bore a brief presentation of the project on the front and the questions on the back. The graphics, size, and texture of the card were designed to make it easier for the sample of respondent to read the questions and answer them. The card was distributed along with the meal tray by the healthcare personnel in charge of the canteen service.

**Table 1. Distribution of the sample of interviewees by facility, location, date, portions of fish served, answering rate, and quantity of fish served**

Facility	Place	Date	Interviewees (N)	Portions of fish served (N)	Response rate (%)	Quantity of fish served (kg)
Elderly care home	Trieste	31/7/2015 20/11/2015	164	620	26,45	111,6
Elderly care home	Urbino- Montefeltro (PU)	18/9/2015	33	200	16,50	36
Elderly care home	Jesi (AN)	31/7/2015 11/9/2015	168	260	64,62	46,8
Hospital	Macerata	24/7/2015 23/10/2015	52	1.350	3,85	243
Hospital	Chiaravalle- Loreto (AN)	6/11/2015 13/11/2015	85	220	38,64	39,6
<b>Total</b>			<b>502</b>	<b>2.650</b>	<b>18,94</b>	<b>477</b>

The sample of population in healthcare facilities involved in the investigation comprises 502 individuals, 75% women and 25% men. The average age of the respondents is 77, 69 for men and 80 for women. The over-80 make up 68% of the sample (77% of the women and 43% of the men); 11% of the sample is within the 65-80 age group (7% of the women and 24% of the men); lastly, 14% of the sample is made up of under-65s (11% of the women and 24% of the men). 7% of the sample did not provide any information concerning their age.

As for sample distribution in relation to the two different types of facilities (nursing home vs. hospital), 73% of the sample lives in a nursing home, whereas the remaining 27% is hospitalised. As can be expected, most of the sample individuals aged 65 or under (81%) are hospitalised, while the respondents aged 80 or over mostly resides in nursing homes (90%). As for the respondents aged 65-80, 64% of them stay in nursing homes, while 36% are hospitalised.

The questionnaire was distributed when the innovative fish recipes were served, for a total of eight times during the experiment. As shown in Table 1, the innovative fish recipes were served in the canteens of five different healthcare facilities, i.e. three nursing homes for the elderly (Trieste, Urbino-Montefeltro, and Jesi) and two hospitals (Macerata and Chiaravalle-Loreto). In total 2,650 portions of fish were served, corresponding to 477 kilos of boned fresh fillets of sea bass and gilt-head bream from Italian aquaculture facilities located near the places of consumption. Each portion was equal to 180 g of raw fish.

### 3 Findings and discussion

The average response rate is equal to 19%, varying from the minimum figure of 4% in the Macerata hospital to the maximum figure of 65% in the Jesi nursing home. This variability depends on the level of collaboration offered by the healthcare personnel involved in the distribution of the meals and questionnaires. In the facilities where the personnel illustrated the content of the card and helped the elderly to fill it in (for instance, by handing out pens or fetching glasses if necessary), the number of questionnaires collected was much higher. This sheds light on the need to better inform (and, possibly, train) not only the members of the managerial staff (who authorise the investigation) but also the workers operating in the facilities under investigation who are in charge of handing out the questionnaires. Moreover, in larger facilities, where the members of staff who distribute the meal trays might be different from those who collect them at the end of the meal, questionnaires may prove to be a less effective tool to reach the elderly guests.

The respondents in the sample eat fish with pleasure: occasionally (52%) or often (43%). Only 5% state that they never eat fish. Most respondents (87%) believe that fresh fish is better than frozen fish and that it is important to eat it at the canteen (85%). The innovative fish recipes were chosen by the vast majority of the sample (97%). Since hospital and nursing home canteens always offer two options for each course (in the case of fish, the alternative second course is usually a meat dish), this figure clearly shows that the innovative fish recipes proposed were extremely successful. Three quarters of the sample (76%) appreciated the recipes, while only 14% did not like them. 10% did not express an opinion. As for the control answer “Q6 – *Would you like to eat similar dishes more often?*”, 70% of the sample gave a positive answer, confirming the general appreciation of the dish. No gender-related differences have emerged within the sample (checked with t test). These results are in line with the minimum leftovers observed by the hospital staff at the end of the meal.

As for the last two open-ended questions, our target was to determine the ratio of answers which can be considered a proxy of involvement in a given topic or of level of participation in a given matter. In the case of our questionnaire, 66% of the sample provided an answer to the first open-ended question. As expected, the rate of answers decreases as the age increases, due to greater difficulty in filling in the questionnaire. This figure shows a good level of interest in the question, i.e. fairly strong involvement in the request to mention a fish-based recipe able to call good memories to mind. The respondents mentioned a large number of typical and regional recipes, in a brief but exhaustive manner. The answers highlight the existence of a wide regional variety of species and preparations, which should be given greater consideration in collective public catering services for the elderly. Unfortunately, the current trend in catering services is to make the dishes increasingly uniform. In order to reduce preparation times and costs, pre-sliced frozen fish products are preferred; also, in order to facilitate consumption, species and preparations with reduced risk of finding bones are often chosen. Conversely, the results of our questionnaire clearly show that fish is ever-present in the food memory of the interviewees and calls positive past experiences to mind. It is not a neutral food, but rather an extremely evocative one. In some

cases, the respondents even quoted dishes linked to the preparation of food in their families (“*the mussels my mother used to make*” or “*fish soup made with heart*”).

Therefore, the decision to present recipes belonging to the regional cooking tradition seems particularly well-founded, as this makes it possible to devise menus which are, at the same time, balanced from a nutritional point of view and able to meet the wide set of needs of elderly consumers, such as the pleasantness of meals, conviviality, and consistency with personal eating habits prior to admission. Indeed, also the European project PERFORMANCE (performance-fp7.eu) focused on the extreme importance of making the recipes palatable, concentrating on the texture and look of the food, in order to counter the loss of appetite typical of elderly individuals (especially those who have trouble swallowing their food due to stroke or dementia), which may eventually lead to malnutrition or general worsening of the person’s whole clinical picture.

The variety of answers collected in our investigation also indicates that it would be interesting to start from the very people who eat in the canteens of healthcare facilities, to assemble a collection of fish recipes from their memories and regional traditions, which can be used as a source for the creation of participated menus.

The second open-ended question was answered by only 11% of the sample. This figure can be interpreted in two ways. There may have been a “physiological” decrease in the respondents’ level of interest (due to their age and their being in a nursing home). Or, perhaps, contributing to the creation of the menus (being asked to provide suggestions) might be seen as less involving, compared to the emotional charge of calling to mind fond memories of fish recipes from one’s past. Hence, there might be more limited willingness to answer the question. If the second hypothesis were true, the figure would be in line with an attitude of “shrinking of responsibility” during canteen meals, already detected in the literature (Roos et al., 2004). Adults tend to delegate decisions concerning the choice of raw materials and preparation methods to those in charge of the catering services. Hence, this attitude might be linked not to lack of interest but rather to trust in the service, which lightens the burden of responsibility linked to the consumption of fish. Indeed, according to a recent study by Ismea, the Italian national Institute for the analysis of the agro-food market (Ismea, 2014) on infrequent consumers of fish (those who eat it once/twice a week or less), the main obstacles to fish consumption at home are: limited trust in retailers, above all for what concerns freshness; the fact that fish is delicate and perishable; the skills needed to purchase and prepare it; the time required to cook it; the potentially unpleasant preparation; and the price of fish. All these elements do not come into play when fish is eaten in a canteen.

Moreover, canteen meals have been linked to healthier, more sustainable behaviour. In other words, adults behave more virtuously when eating at the canteen than when eating at home (for instance, they eat more fish and vegetables) (Roos et al., 2004). For all the above reasons, the canteens of healthcare facilities seem the ideal place where to promote the consumption of fish.

Few answers were provided to the last question (*Suggestions*), but it is useful to comment on them. Most suggestions are requests for different species (especially squid, but also sole, gilt-head bream, pilchard, *No anchovies!*) and different preparations (for instance, *when roasted it’s tastier, grill it, boiled fish, a fish broth, risotto*). The most common request concerns fried fish or mixed fried fish (N=11). These answers confirm the need for greater variety in the dishes offered, including less healthy ones (frying is generally avoided in public collective catering facilities), and for recipes closer to “home cooking”. Some comments mention excessive portions (N=4), while others concentrate on salt and other condiments (for instance, *could have been spicier, better without tomato sauce, less sauce, not enough salt and condiments, too salty, season it better, prepare the fish with lemon and parsley, more salt*). In order to address this issue, it would be sufficient to make some condiments (such as salt and lemon) available on the tables of the canteens, exactly like they are at home. A few comments express specific concerns and wishes, which are useful to improve the service: *do not manipulate the fish, make sure it’s fresh, twice a*

*week, canteens should be equipped for people with celiac disease.* Lastly, it is encouraging to note that several comments are simply compliments (N=11).

As for the logistic, managerial, technical, and organisational aspects of this innovative canteen service, similar projects successfully implemented in the past have been used as reference. In the following table, the main characteristics, innovations, and solutions adopted are illustrated for each project.

The most innovative measures common in all the projects are:

- careful choice of suppliers, privileging national or even local, aquaculture, organic and sustainable suppliers<sup>1</sup>;
- choice of the fresh product instead of the frozen one<sup>1</sup>;
- attention given to the shelf-life of the product, transport and storage modes;
- first processing (gutting, skinning, boning and transformation into fish fillets) charged to the producers;
- revival of attractive and healthy traditional recipes;
- preparation of the recipes in the school kitchens;
- training of the managerial and kitchen staff;
- education and/or information of final users.

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<sup>1</sup> This is allowed by the Italian Government issued Finance Law n. 488, 1999 establishes a direct and explicit link between quality, organic and local food and public sector catering. As stated in art. 59, comma 4, “Measures to facilitate the development of organic and quality agriculture”: “To guarantee the promotion of organic agricultural production of quality food products, public institutions that operate school and hospital canteens will provide in the daily diet the use of organic, typical and traditional products as well as those from denominated areas (omitted). The awarding of catering contracts will be based (omitted) on the quality of agricultural products offered.” [WWW] <http://www.camera.it/parlam/leggi/994881.htm> (accessed on 29/2/2016).

**Table 2. Cases of innovative and sustainable fish supply chain in Italian public food procurement**

<b>Project/Initiative</b>	<b>Sanpei 1 and Sanpei 2 R&amp;D projects</b>	<b>Tender of the Municipality of Rome</b>	<b><i>Pesce italiano a mensa</i> (Italian fish in the cafeteria) project</b>	<b>Pappa Fish project</b>
<b>Funder</b>	Ministry of agricultural, food and forestry policies, Organic Office	Municipality of Rome	Ministry of agricultural, food and forestry policies, Fisheries Dept.	Marche Region, Fisheries Dept. and European Fisheries Fund
<b>Target</b>	School and universities' canteens	School canteens	School and universities' canteens	School canteens
<b>Place</b>	Municipalities of Rome, Moncalieri (Turin) and Porto Recanati (MC); Polytechnic of Turin	Municipality of Rome	University of Rome La Sapienza and Municipalities of Manfredonia, Trieste and La Spezia	From 2013 to 2015, 22 → 42 Municipalities involved in the Marche Region
<b>Supply dimension</b>	7 times, approximately 3,000 fish meals served	150,000 fish meals served every time	6,400 fish meals served, 768 kg of boned fresh fillets	From 2013 to 2015, 10,000 → 25,000 children involved; 90,000 t of fish per year
<b>Activities related to the provision of innovative fish</b>	R&D; education; extension and training		Extension	Communication; education
<b>Origin and quality of the product</b>	Fresh, organic, farmed fish of locally grown and very common Italian species such as trout, mullet, sea bream and sea bass	Organic and conventional farmed fish, along with the (rewarded) option to use fresh fillets to replace the standard frozen ones	Fresh Italian farmed fish, certified "Friend of the Sea"	Fresh farmed fish and fresh fish from small-scale fisheries (the so-called poor fish), from the Adriatic Sea
<b>Recipes</b>	Sea bass, sea bream and trout burgers; pasta with mullet sauce	Breaded sea bass fillets; sea bass fillet medallions; pasta with organic trout sauce	Sea bass and sea bream nuggets, breaded sea bass and sea bream medallions, pasta with sea bream sauce	
<b>Source</b>	Pagliarino, 2015; Pagliarino, 2013	Municipality of Rome, 2013	Agostini et al., 2015	Pappa Fish website: <a href="http://pappafish.regione.marche.it">pappafish.regione.marche.it</a> and Pappa Fish video report: <a href="https://www.youtube.com/watch?v=V5thXoMfpys">youtube.com/watch?v=V5thXoMfpys</a>

#### 4 Conclusions: fish to increase memory and memories of the fish

The government-supported project “Italian fresh fish in the canteens of healthcare facilities”, aims to promote consumption of Italian fresh fish, from fishing and aquaculture. Earlier initiatives concerned canteen services in schools and universities, due to the educational value of meals in these contexts. This project shifts the focus to elderly individuals in nursing facilities and hospitals. The volume of the experimentation has increased and the experimentation has become more complex and delicate.

Our study shows that fish is not a neutral food, but a very evocative one. It is present in the food memory of elderly people and it is able to call pleasant and family-related memories to mind. The results collected confirm the validity of the project hypothesis, which is revolutionary if compared to the current situation of healthcare catering services and is based on the choice of fresh fish products, of varieties which are commonly eaten in Italy (such as sea bass and gilt-head bream), prepared according to recipes that are as close as possible to the habits and traditions of the elderly. This makes the consumption of fish, and of meals in general, more pleasant and attractive, with a positive impact on the overall physical and psychological wellbeing of the elderly and the sick.

Another important result is that, towards the end of the project, the Ministry asked to extend the service to three additional facilities, initially not included. Two of these are hospitals (Vibo Valentia and Vallo Della Lucania, in the South of Italy) which are difficult to reach, making it harder to manage logistics, and located in deprived areas, so that public intervention is even more valuable. The third facility is the paediatric hospital in Massa, Tuscany.

The public administration is increasingly certain of the significant impact of the project, thanks to the positive feedback received. All the different actors involved in the supply chain agree that the project is working well. Therefore, the public administration has been emboldened to extend the project to include healthcare catering services for a new group - very young patients.

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