

# PRONUTRISENIOR: A HOLISTIC APPROACH TO THE OLDER ADULTS LIVING IN THE COMMUNITY – RATIONALE AND METHODOLOGY

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## Abstract

*PRONUTRISENIOR is a holistic approach that considers older adults as part of their environment, in order to better assist health professionals, caregivers and other professionals to monitor their nutritional status and thus reduce malnutrition in this population group. The education and empowerment of professionals were preceded by an assessment of the community and its environment. Such information was subsequently incorporated into the educational and informational materials to support training and empowerment programs. This paper presents the project rationale, describes the methods applied to attain the objectives defined within the scope of the older adults living in its environment, and presents general data on the studied population and sample.*

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## Keywords:

*Nutrition; Older adults; Holistic approach; Empowerment; Health professionals; Caregivers.*

## Resumo

*O PRONUTRISENIOR é uma abordagem holística que considera os idosos integrados no seu meio ambiente com o objetivo de melhor capacitar os profissionais de saúde, cuidadores e outros profissionais para a monitorização do estado nutricional e assim diminuir a desnutrição neste grupo populacional. A formação e capacitação dos profissionais foram precedidas por uma avaliação da comunidade e seu ambiente. Esta informação foi subsequentemente integrada nos materiais educativos e informativos desenvolvidos para apoio aos programas de formação e capacitação. Este artigo apresenta os aspetos teóricos e metodológicos usados para atingir os objetivos definidos com foco nos idosos a viver no seu ambiente/ comunidade, e apresenta dados gerais sobre a população e amostra estudadas.*

## Palavras-chave:

*Nutrição; Idosos; Abordagem holística; Capacitação; Profissionais de saúde; Cuidadores.*

## INTRODUCTION

As in most developed countries, around 20% of the Portuguese population is aged 65 years or above, a demographic change that has occurred at a relatively fast pace in the past three decades (from 1132 638 in 1981 to 2010 064 in 2011<sup>1</sup>).

In Portugal, the long period of political, economic and social stagnation (1926 to 1974) still reveals profound negative consequences on the older adults population, which have scarce financial resources, were educated at a low level and may live in social isolation, circumstances that may increase their risk of malnutrition. To avoid the negative effects of malnutrition on the older adults health and well-being it is of the utmost importance to identify the factors that contribute to increase this condition or, on the contrary, that protect against it.

The decrease in malnutrition implies identifying and understanding the causes of this complex and multifactor problem. It also requires that health professionals and caregivers through formal (day centers, social centers, home support, nursing homes, health services) or informal structures (family, friends, neighbors) are enabled

to promote a good nutritional status and to reverse the situations of malnutrition, thus playing a fundamental role in the nutritional surveillance of the senior population. This action should primarily be directed to the older adults in the community and at a stage where it is still possible and advantageous to avoid its intensification<sup>2-5</sup>. In the European Union and in the United States of America, 25 to 60% of hospitalized older adults and 10 to 85% of those institutionalized suffer from malnutrition with different degrees of severity<sup>6</sup>. In 2005 we identified that 9% of male and 15% of female Portuguese older adults living in the community had a medium/ high risk of malnutrition<sup>7</sup>. Food and nutrition, together with other lifestyle and environmental factors, have a huge impact on health and wellbeing and affect the quality of life of older people<sup>2,8</sup>. Social aspects, such as poverty, social isolation, difficulty or impossibility to purchase, prepare or cooking food and meals, religious beliefs and individual preferences, influence food intake and, consequently, nutritional status<sup>9</sup>. Thus, eating is crucial not only to the health status but also to the quality of life in a holistic perspective<sup>2</sup>. We have previously found that low education and income, vision and oral health problems, reduced physical activity, coexistence of several chronic diseases, and, consequently, multi-medication, often occur in Portuguese older adults and influence their nutritional status<sup>10</sup>. Among these older adults, food intake was determined by socio-economic factors (price, availability, habits, traditions, existence of formal/ informal supports), physical and health constraints (related to aging itself, chronic disease and consequent change of eating habits) and psychological factors (loneliness, loss of spouse, depression), and expressed the lack of quality of life related to food and their nutritional status. More recently, in 2009, Portuguese older adults were found to consider that relatives and friends support, the environment in which they lived and body weight as health determinants. On the other hand, the price of foods, cultural, religious and ethnic issues, as well as diet advised by the doctor, are determinants of food choice<sup>11</sup>.

In the current project we aimed to reinforce the assertiveness of the involvement of health professionals in the improvement of the nutritional status of the older adults. In order to adequately plan interventions, the specificities of the target audience in their environment ought to be taken into account, but health professionals do not usually have access to individual and context information (environmental, social, economic, cultural) of the older adults, which would allow to diagnose the problems and to define their intervention strategies<sup>12,13</sup>. This project underpins educational programs for health professionals in the knowledge of the community in which they exert their activity.

PRONUTRISENIOR is a holistic approach that considers older adults as part of their environment, in order to better assist health professionals (and others working in the community) to monitor their nutritional status and thus reduce malnutrition in this population group. Therefore the education and empowerment of professionals was preceded by an assessment of the community and its environment. Such information was subsequently incorporated into the educational and informational materials developed to support the training and empowerment programs.

## **OBJECTIVES AND PROJECT LAYOUT**

The main objectives of this project were as follows:

- a) To empower health professionals (and others working in the community) for the nutritional surveillance of older adults suffering from different levels of deprivation;
- b) To develop “tailored” training programs, to be delivered in room, by distance learning or on-line, to health professionals and other professionals in geriatrics.

Subsequently, various specific objectives were established and organized in the following three main groups:

I) Within the scope of the population living in its environment:

- To identify and georeference the older adults population (65 years or above) living in the community;
- To georeference the formal structures of food support considering all levels of dependency (nursing homes, daily and social centers, home care, parish centers, or other) as well as food supply in the community;
- To assess socio-economic characteristics of the older adults population and to identify social and economic inequalities;
- To assess the older adults nutritional status and to identify older adults at nutritional risk;

- To evaluate lifestyles including eating habits, physical activity and food acquisition;
- To understand the relevance of food and nutrition to the older adults quality of life;
- To understand the role of community structures (formal and informal) to the provision of foods and meals to the older adults;
- To establish the relationship between quality of life, food/ eating and socio-demographic characteristics of the older adults.

II) Within the scope of professional empowerment:

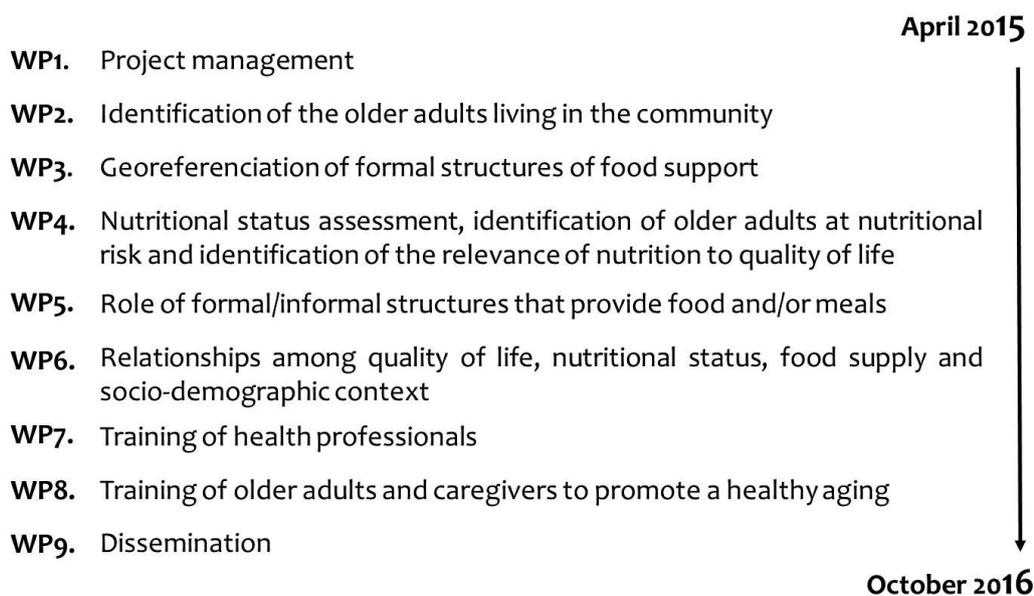
- To identify training needs of the different professionals groups;
- To plan educational programs for health professionals and other professionals working with the older adults population;
- To develop information and training support materials to use in different contexts (in room, distance learning, e-learning).

III) Within the scope of older adults empowerment:

- To identify information and educational requirements;
- To plan, develop and deliver food and nutrition education sessions for the older adults, their relatives, friends and others who directly or indirectly may play a role as food/ meal providers.

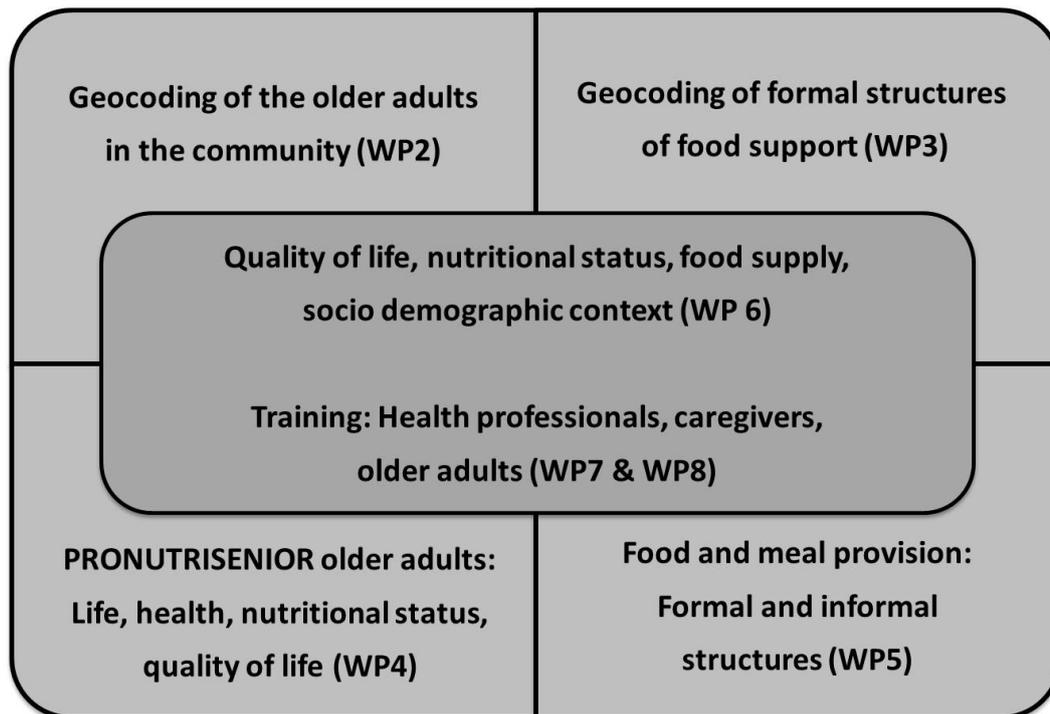
The project was organized in nine workpackages (WP) and took place between April 2015 and October 2016 (Figure 1).

Figure 1 — The nine workpackages of the project PRONUTRISENIOR



The interconnections amongst workpackages are illustrated in Figure 2.

Figure 2 — Interconnections amongst different workpackages



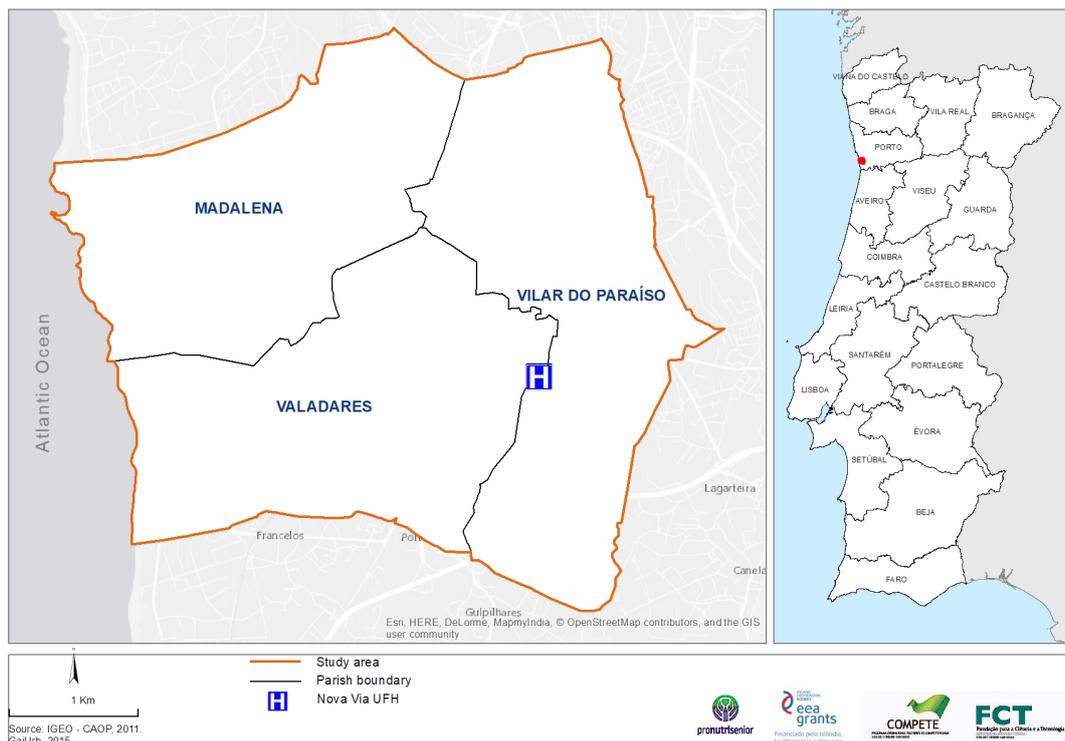
### **ETHICAL AND DATA PROTECTION ISSUES**

The project was submitted to the Ethical Commission of the Northern Health Authorities (ARS Norte) and to the National Data Protection Commission (CNPd) having been cleared to be carried out. Putative participants were fully informed of the projects' aims, objectives and methods as well as of their rights according to the Helsinki Declaration and applicable legislation. Acceptance was given through signed informed consent. Personal data was protected using a coding system, which also guarantees anonymity.

### **POPULATION AND SETTING**

The project took place at the Family Health Unit (FHU) "Nova Via", a primary care health center in Vila Nova de Gaia included in the ACES Espinho-Gaia (Porto Metropolitan Area). The geographical area covered by the FHU includes a heterogeneous population of older adults living in rural, semi-urban, urban, coastal and inland environments, with different educational levels and socioeconomic status (Figure 3). Older adults correspond to 16.2% of the overall population in the three parishes covered by this primary care health center, a proportion similar to the one in the North region of the country (17.1%) and in Portuguese mainland (19.3%)<sup>14</sup>.

Figure 3 — PRONUTRISENIOR geographical area



Older adults registered at the FHU “Nova Via” and living in the parishes of Madalena, Valadares and Vilar do Paraíso were identified through their family doctor registries (according to data from 2014). A total of 3073 potential participants were identified.

Invitation to participate in the project was carried out with the assistance of the FHU’s administrative staff. Registered older adults were contacted whenever they had an appointment with their family doctor or by phone. A team member provided a brief verbal description to each possible participant and acceptance was given through signed informed consent. Interviews and assessments were carried out at the FHU or at the participant’s home, according to their own preference.

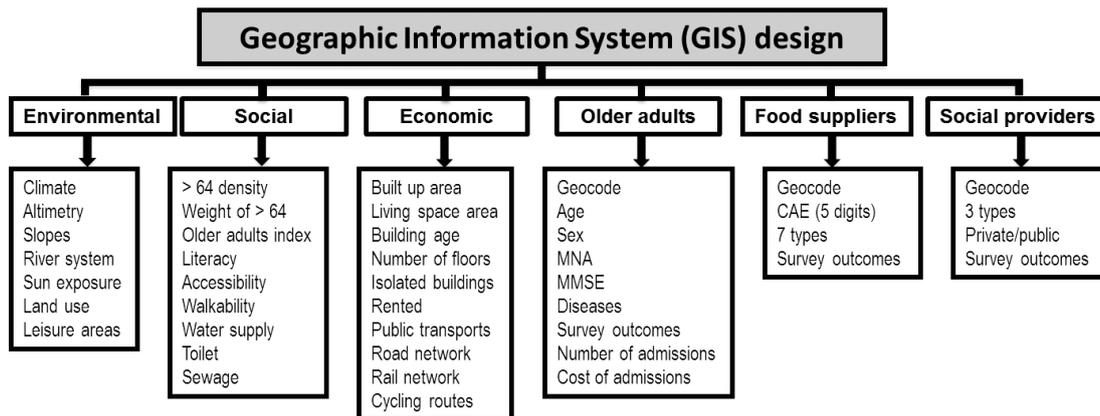
## METHODS

In this section the various methods and approaches applied in the project will be presented by work package with the exception of WP1 and 9, which covered the entire duration of the project. In the first one – Project management – all organizational issues were centered and WP9 was in charge of all dissemination activities.

### WP 2 and 3 – Geocoding of the older adults living in the community and geocoding of formal structures of food support

These WP were dedicated to the georeferenciation of the older adults population living in the community as well as of the formal structures of food support considering all levels of dependency (nursing homes, daily care and social centers, home care, parish centers, or other) and food supply in the community. The following figure illustrates the geographic information system design, including all variables taken into account in order to obtain the most complete picture of the area under research.

Figure 4 — Geographic information system design



#### WP 4 – Life, health, nutritional status and quality of life

To achieve the objectives of WP 4, the research team developed the PRONUTRISENIOR protocol, which aimed to obtain a comprehensive portrait of the participants' various facets of their lifestyles as food intake, physical activity, smoking, health and wellbeing as well as food habits across the life cycle. A combination of quantitative and qualitative methods was used to gather information through an interview assisted protocol organized in the following sections:

- Socio-demographic characteristics;
- Housing, household and social network;
- Cognitive status: Mini Mental State Examination;
- Daily activities: physical and cognitive independency;
- Global health perception;
- Oral health, sensory organs, skeletal-muscle ageing, diseases and medication;
- Use of health and social services;
- Lifestyle: smoking, physical activity;
- Food procurement, routines, supports, determinants;
- Food intake: quantified 24h-recall, frequency of consumption of some foods;
- Eating-related quality of life;
- Food and eating across the life cycle, seasonal & climatic variation in food and eating;
- Food related information needs and wants;
- Income and expenditure on foods;
- Anthropometry and body composition;
- Nutritional status screening: Mini Nutritional Assessment.

The Mini Mental State Examination (MMSE)<sup>15</sup>, adapted for the Portuguese population<sup>16</sup> was applied to identify subjects with cognitive impairment which lead to their subsequent exclusion from the project. The scale developed by Lawton & Brody<sup>17</sup> was applied to record subject's daily activities and therefore to ascertain their physical and cognitive independency. Physical activity was measured through the application of the short version of the International Physical Activity Questionnaire<sup>18-20</sup>. Eating related quality of life was assessed through the scale Food related Quality of Life, developed and validated within the project Food in Later Life<sup>21</sup>. Anthropometric assessment (weight, height, waist, arm and calf perimeters) was carried out according to the internationally recognized methodology<sup>22,23</sup>. BMI was computed and categorized according to the WHO recommendations for people aged 65 or above<sup>24</sup>. The Mini Nutritional Assessment (MNA)<sup>25</sup>, validated for the Portuguese population<sup>26</sup> was applied to assess participants' nutritional status.

### **WP 5 – Food and meal provision: formal and informal structures**

Information provided by the participants lead to the identification of food and meal suppliers in the community. Semi-structured interviews were carried out with the heads of the identified providers, aiming to identify good practices in providing services to seniors. Questions about preferences and determinants of seniors' choices were also included.

### **WP 6 – Quality of life, nutritional status, food supply and socio-demographic context**

This workpackage brought together the data retrieved from workpackages 2 to 5 in order to be jointly analyzed. The information on the population's socio-economic and environmental characteristics, integrated with its nutritional status data enabled to profile the nutritional inequalities of the older adults by sex and socioeconomic status. Subsequently, training activities were developed and delivered to older adults, health professionals, caregivers and other professionals working with older adults.

### **WP 7 and 8 – Training: health professionals, caregivers and older adults**

In these WP the information obtained from the previous WP was used to plan, develop and deliver training activities to older adults, health professionals, caregivers and other professionals working with older adults (Table 1) Informational and training support materials for use in different contexts (face-to-face, distance, on-line) were also developed, used in the sessions and also made publicly available to users and professionals alike.

**Table 1 – Informational and training support materials**

|   | <b>n</b> |
|---|----------|
| Health professionals and caregivers training sessions | 10       |
| Food/ meal suppliers training sessions                | 20*      |
| Older adults training sessions                        | 74**     |
| Didactic publications                                 | 6        |
| Multimedia materials                                  | 22       |

\* 5 different topics delivered in four institutions; \*\* 22 different topics delivered in four institutions.

## **CONCLUDING REMARKS**

PRONUTRISENIOR was designed as a magnifying lens to investigate in great detail a community in northern Portugal. The nutritional status, health and wellbeing of free living older adults (that is, non-institutionalized) were at the core of the project which focused on the empowerment of professionals (health staff and caregivers) to better serve the older adults needs and wants. The FHU Nova Via was selected because the three parishes covered by this project present geographical diversity of the landscape, heterogenous accessibility, both walking and by motorized transportation, and large differences in socio-economic characteristics of the inhabitants, in particular the older adults.

A geographic information system was developed and feed with data regarding cartography (namely biogeophysical support, road network, demographic and socio-economic information) and information on the older adults, food and meal providers, support structures, and care provider sites. This system is used to identify and georeference older adults at nutritional risk, and to develop social economic and environmental vulnerability maps based on the referred features and, in particular, distance/ cost/ time estimates to healthy eating providers.

In terms of research by itself, and besides the assessment of formal and informal caregivers, food and meal providers, support structures and health professionals, a great focus was put on the direct assessment of the older adults. This assessment constitutes the core of the information collection, as it included not only nutritional

status and health assessment, but also several other areas of great interest to plan subsequent interventions. From these, we highlight the older adults perception of their eating-related quality of life, and access to food and meals (in what acquisition, support from formal and informal caregivers, among others, are concerned). Another main point of the project, based not only on the literature but also on those issues previously reported, was the development of informational and education materials as well as training. Based on the relevance of themes identified by the different groups and their preferences regarding delivery formats, materials and educational/ training sessions were planned, built and delivered to the older adults, caregivers, health professionals, food and meal suppliers. Health professionals also received training for the use of the geographic information system.

Two specific issues are worth noticing. First, data regarding social institutions and good practices on providing food services allow the identification of their characteristics, needs and potentialities, which will inform future action. These, in turn, will improve the ability to provide nutritionally adequate meals in canteens, namely to vulnerable groups. Also, the results of the analysis of health professionals' needs were relevant for tailoring their training. The materials and training sessions will contribute to improve their daily practice. The aim of training professionals is directly linked to their empowerment to improve the nutritional status and health of older adults. Therefore, the same results apply to both these objectives.

Simple and concise messages were conveyed through a series of short movies directed to the older adults assisted by the FHU "Nova Via". These materials are also freely available at the Project website ([www.pronutrisenior.com](http://www.pronutrisenior.com)) and in YouTube ([www.youtube.com/channel/UC6eTAKBvqXVuCqQhWRKX3SA](http://www.youtube.com/channel/UC6eTAKBvqXVuCqQhWRKX3SA)) which enlarges the target population to other regions and countries. The eight short movies are available in different versions of which with Portuguese or English subtitles and sign language for a wide audience.

Also at the local level, the municipality showed a great interest in the project results, in order to identify areas of nutrition vulnerability and subsequently plan and execute appropriate policies to tackle the problems. Non-governmental organizations as social solidarity institutions also benefit from the project outcomes, especially through the good practices codes and staff training.

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