Project Title: Impact of multiple non-pharmacologic interventions to prevent cognitive decline – the MIND-Matosinhos trial

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3. Research project/ Research Group website (Url):
   https://ispup.up.pt/research/epiunit/non-communicable-diseases/description/?lang=en
4. Website description (name to use in a link):
   Multiple interventions to prevent cognitive decline – the MIND-Matosinhos trial

Research project

Background (max. 1000 characters):

Brief background overview of the research field also providing an explanation of the innovative nature of the application.

Worldwide, the incidence of dementia has been increasing, which brings several challenges to healthcare systems and societies. In fact, dementia hampers the quality of life and autonomy of individuals, also having a deleterious family, social and economic impact. Since previous studies have shown that modifiable vascular and lifestyle risk factors are associated with an increased risk of dementia, it is crucial to develop multi-domain strategies that may maintain cognitive function and prevent cognitive decline.

Therefore, this project aims to assess the impact of multiple non-pharmacologic interventions on the cognitive function of at-risk individuals from the general population, namely cognitive training, physical activity, nutritional education, hearing assessment and correction, and training to adapt to cognitive decline. The implementation of this community-based randomized controlled trial (RCT) will provide an innovative and robust approach to the prevention of cognitive decline.
Research plan and methods (max. 2000 characters):

Describe the research plan and methods. Identification of the major scientific question you wish to address and the objectives of the project. Provide a general description of the approach used to reach the aims.

This project will be based on an RCT designed to quantify the impact of multiple non-pharmacological interventions on the cognitive function of individuals at high risk of mild cognitive impairment (MCI) from the Matosinhos municipality.

The intervention group will receive an intensive intervention composed by cognitive training, physical activity, nutritional education, hearing assessment and correction, and training to adapt to cognitive decline. The control group will receive a less intensive intervention, focused on cognitive training (fewer number of sessions), nutritional education and adaptation to cognitive decline. The RCT will be conducted over a two-year period.

All residents of the Matosinhos municipality and/or users of the Matosinhos Local Health Unit, will be included if they present: 1) a score ≤2 standard deviations below age- and education-adjusted cut-offs of the Montreal Cognitive Assessment (MoCA) or a diagnosis of MCI in the last six months, performed in a hospital neurology department; 2) a score ≥6 points on the CAIDE (Cardiovascular Risk Factors, Aging, and Incidence of Dementia) Dementia Risk Score. Individuals without autonomy to perform activities of daily living, who have a pathology that contraindicates the practice of physical activity, and those with <4 years of schooling will be excluded. Afterwards, eligible individuals who agree to join the RCT will be randomized (1:1) into two arms: the intervention (N = 150) or control group (N = 150). Additionally, participants’ caregivers or partners will also be invited to participate in the activities related to nutritional education and adaptation to cognitive decline.

To assess the impact of this project, several indicators evaluated in the pre- and post-intervention period will be compared, including cognitive performance, which will be assessed by a neuropsychological battery tests and web-based tools, such as the Brain on Track and COGWEB.
Expected outcomes (max. 1000 characters):

Refer to the expected outcomes/impact of the project and how this will impact on the scientific strategy of the host institution.

The present study will gather crucial knowledge on preventive and control approaches for dementia, which may improve the prognosis and wellbeing of individuals with MCI and influence health policies.

The results will be disseminated through the publication of four scientific papers in peer-reviewed journals, and will be presented in national and international meetings. These communications will allow for the discussion of the main findings with peers, as well as the project’s strengths and limitations. With support from ISPUP’s Communication Department, results will also be disseminated among the general population and policy makers using different channels, including newspapers, TV and social media.

This project is in line with the main objectives of the EPIUnit’s Non-Communicable Diseases Epidemiology Group. In fact, the research activities of this group are mainly focused on the burden of major diseases, with a particular focus on their prevention and control.

Fellowship Position description (max. 2000 characters):

Identification the applicant’s expected qualifications and key skills and a brief description of the planned activities/duties.

The applicant to this project should have an academic background in Health Sciences or a closely related field. Experience in epidemiological research projects will be valued, including carrying out structured interviews with participants, data insertion and management of databases, and performing data analyses. They must have availability to be a fulltime student, and be fluent in English and Portuguese (written and spoken).

Within this project, the student will actively collaborate in defining the specific objectives of all the works that constitute the PhD thesis, and will participate in the recruitment of potential participants, their allocation in the intervention and control groups, the preparation and management of multi-domain intervention sessions, as well as in the baseline and follow-up evaluations. Their tasks will also include data analysis, the interpretation of the main findings,
and writing the initial versions of all manuscripts. Additionally, the applicant will be expected to attend PhD student meetings, scientific courses, conferences and seminars to complement their advanced training, and will also be involved in the dissemination of the project’s results, including the presentation of oral and poster communications in national and international meetings.

The applicant will have the opportunity to participate in a currently funded project (POISE-03-4639-FSE-000793), and will contribute to the development and implementation of innovative neuropsychological approaches. The student will be integrated in a multidisciplinary group, and will take advantage of the team’s expertise in epidemiology, public health and neurology fields, with experience in implementing several observational and experimental studies.