

MEETING ABSTRACTS

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# Center for Interdisciplinary Research in Health (CIIS) National Meeting 2023

Lisbon, Portugal. 31 March - 01 April 2023

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The Center for Interdisciplinary Research in Health (CIIS) is the research center of the Universidade Católica Portuguesa (UCP) focused on health care. The Center is organized in five platforms, and distributed in four geographies across Portugal: Lisbon, Porto, Viseu and Sintra (Table 1). The center has currently 155 active researchers and attracted funds exceeding 10M€.

For the first time ever, CIIS has organized a National Event that included researchers from all platforms and disciplines, in a truly interdisciplinary and translational scientific event, counting 117 registered participants and 120 abstracts. The meeting took place at the Faculty of Medicine, in the Sintra campus, on the 31<sup>st</sup> March and 1<sup>st</sup> April 2023. The Scientific Committee of the CIIS National Meeting decided that the theme for the meeting is *Interdisciplinary Health Care*. Rather than clustering researchers by platform or discipline, we decided to create three working sessions that are inclusive to everyone and not restricting the presentations by discipline, being therefore, interdisciplinary. These are: 1 – *Translational Care*; 2 – *Clinical Care*; and 3 – *Community Care*.

The meeting was held in the presence of the Universidade Católica Portuguesa Rector Professor Isabel Capelo Gil, the Vice-Rector Professor Peter Hanenberg, the Director of the CIIS, Professor Marlene Barros, the Director of the Faculty of Medicine, Professor António Almeida and the guest speaker Professor Tomáš Zima, Charles University, Prague, Czech Republic, and hosted by the Deputy Director of the CIIS, Professor Paulo J. G. Bettencourt.

For two days, papers were presented by invited speakers within each session, and posters were presented by CIIS researchers and students, in a highly anticipated poster session. All abstracts were peer-reviewed. To bring further excitement to the poster session, the Meeting Scientific Committee selected the best poster from each platform to receive the Best Poster Award. Finally, the CIIS platform coordinators presented their plans and vision for the future.

Following the success of this meeting, the Scientific Committee of the National Meeting, decided to implement yearly meetings of the Center.

We would like to acknowledge all CIIS members, staff and students that accepted the challenge of participating in this event, presenting their most recent data, sharing their knowledge, and making this truly an interdisciplinary health care event.

We hope this meeting has contributed to share the latest scientific achievements of all members and promoted the beginning of new collaborations for the future, keeping in mind the main goal of improving health care with an interdisciplinary view, to ultimately improve quality of life, with humanity and spirituality at the center of all scientific quests.

## Acknowledgements

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**Table 1 Platforms of the Center for Interdisciplinary Research in Health**

Name	Location	Head
Neurosciences	Lisbon and Porto	Prof. Ana Mineiro
Nursing	Lisbon and Porto	Prof. Paulo Alves
CatólicaMed	Sintra	Prof. Paulo Bettencourt
SalivaTec	Viseu	Prof. Nuno Rosa
Precision Dental Medicine	Viseu	Prof. André Correia



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approaches for the primary and secondary prevention of dementia. DemenPrev aims to develop an intervention methodology for dementia prevention in the Portuguese context, comparable to international interventions, and to test its feasibility, both in terms of intervention and in terms of some of the outputs, in an innovative area of enormous potential relevance. As far as recipients are concerned, we hope to maintain or even improve cognitive, biomedical, and motor fitness parameters. We hope to leave intervention capacity, involving and training technicians whenever possible. Integration in the international network of reference in the area, World-Wide-FINGERS Network and their guidance in planning, harmonizing methods and application, helps to align the study with the international standards for dementia prevention.

In this communication we intend to present the final protocol that resulted from the adaptation of the methodology to the Portuguese context, as well as the adaptation of the intervention to the expected duration of 6 months of intervention of the feasibility study.

### O18

#### - Research on spirituality in health: Internationalization, integrality, innovation, and implementation

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#### Background

From a multidisciplinary perspective, this project – *Spirit in Health* – arises from a nursing background, the holistic approach to patients' responses toward health conditions or life transitions, across the lifespan, based on dignity-preserving care. This research project explicitly concerns spirituality, a critical dimension of life and, in times of illness, defined as a dynamic and individual dimension related to the search for meaning, transcendence, and connectedness, regardless of being religious or non-religious.

#### Case report

This research project is designed in five dimensions: A (assessment and diagnosis), E (education and theory), I (Interventions), O (Outcomes), and U (Using resources and management). Specific goals of each dimension are regularly defined and updated according to new dissertations and international evidence. In this communication, the rationale, theoretical background, and structure will be disclosed, based on the "four I's" of the project, as follows: internationalization – all international networking will be listed in terms of expertise for advisory, collaboration in funded or nonfunded projects, and publication outputs; integrality – this project merges two critical areas within the Catholic University of Portugal (CUP), such as spirituality and health and, in this regard, the collaborative projects and other opportunities for collaboration among different faculties, research centers, projects, or researchers will be listed opening new paths for the future, aiming at responding to the strategic plan of CUP, mission, and values, and strengthening funding; innovation – spirituality is not innovative in health. Still, the need to work on new ways of understanding spirituality and implementing it requires innovative approaches. Some outputs related to this critical topic will be listed, which are getting international attention; implementation – four implementation examples will be displayed: three in education (one in Portuguese and two international) and another in a Portuguese clinical setting.

#### Conclusion

This project aims to nurture a broader and interdisciplinary project at Católica that may respond to the mission and create value in research, teaching, and implementation.

### O19

#### - Diagnosis and risk prevention of Covid 19 in homeless people in Lisbon

Amélia Simões Figueiredo<sup>1,2</sup>, Ana Resende<sup>2</sup>, Cândida Ferrito<sup>2</sup>, Sérgio Deodato<sup>1,2</sup>, João Neves-Amado<sup>1,3</sup>, Dina Manso<sup>4</sup>, António Almeida<sup>1,5</sup>, Amélia Feliciano<sup>5</sup>, Nuno Rosa<sup>1,6</sup>, Marlene Barros<sup>1,6</sup>

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#### Background

The study is part of a broader research project – Public Bathhouse Nursing – dedicated to the study of vulnerable populations that use the Public Bathhouse in the city of Lisbon [1]. When SARS-CoV-2 pandemic situation started, structures for homeless people, at that time counted as 3029, were reinforced in Lisbon city.

These people do not manage health autonomously, thus requiring definition of strategies for testing and early diagnosis, to promote isolation and quick endorsement to Portuguese National Health Service.

The project was approved by the Health Ethics Committee of the Regional Health Administration of Lisbon and Tagus Valley (Opinion 2776/CES/2021).

#### Materials and methods

Tracking SARS-CoV-2 lab tests were performed to the people from Temporary Housing Centers, Social Emergency Housing Centers and to those who, being homeless, were identified by street technical teams.

Our objectives were the detection of SARS-CoV-2 in the homeless people using the Public Bathhouse of Alcântara and of 10 structures of Planning and Intervention Centers in homelessness, such as street teams, temporary emergency shelters and cafeterias, promoting early detection and adequate endorsement of positive cases.

The process of collection of spittle was performed between November 29<sup>th</sup>, 2021 and February 7<sup>th</sup>, 2022.

From the initial 455 samples collected, 59 were annulled, due to poor quality and quantity. An error of 3,6% was considered, with a confidence level of 95,0%, thus making viable samples n= 396.

#### Results

Those 396 tracked people revealed an incidence rate of the disease of 2%, while, during the same period, the whole country rounded 18%. A study carried out in the United States of America did not find statistically significant relevance between the values of the incidence of the disease COVID-19 among homeless and non-homeless [2]. On the other hand, a Danish study revealed that the homeless population seems not to have been affected by COVID-19 in the first wave [3]. The positive cases of COVID-19 who were lodged temporarily in Social Emergency Housing Centers, were isolated there, upon indication of Regional and Local Authorities, that were properly informed.

Positive cases of homelessness people identified and tracked on the streets, were endorsed to the Rear Support Structure, to guarantee appropriate isolation and dignified convalescence.

#### Conclusions

The conclusion was that the incidence rate of COVID-19 in homeless people is below general population in Portugal.

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## Poster Presentations

### Session 1 - Translational Care

#### P1

#### - Executive functioning training in typically developing adolescents: data review from the last 10 years

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#### Background

Executive functions (EF) are top-down cognitive processes that affect different life aspects, such as academic success, health management, and, at a last level, public safety. If, on the one hand, literature accumulated data about the possibility of training EF, on the other, adolescence opens a window of opportunity for intervention due to brain, mind-body, and social transformations. Researching effective ways to promote EF in adolescents has a scientific and social value, which motivated this review work.

#### Methods

Through a systematic review, we highlighted the evidence of training EF during adolescence and searched for connections with academic success. Our search gathers knowledge about 1) the tasks (computerized and non-computerized) used to improve EF in adolescents, 2) the program's effectiveness, and 3) the conditions and settings of training EF.

#### Results

We reviewed studies between 2011 and 2021 across six databases to search for empirical studies with a control group that studied at least one core EF training in typical development adolescents (13-19 y). We only considered peer-review papers published in English, with more than one training session and more than 8 participants. From a pool of 4,002, 14 articles were included in the final analysis. As the main results, we highlight that no single training program was repeated, and measurements vary across multiple tasks and self-reports. The effectiveness lies in low and medium, but no study registered long-duration effects. Computerized training programs have the potential to measure with low bias; however, the only comparison study shows that non-computerized training got promising results.

#### Conclusions

Evidence points to the need for more robust evidence in EF training for adolescents with typical development. Future research should follow open science methodology (i.e., registration of protocols and interventions; open datasets) to reinforce clarity about EF theoretical framework and (non)standardized outcome measures options.

#### Keywords

Executive functions, training, adolescents, inhibitory control, working memory, cognitive flexibility, academic achievement.

#### P2

#### - Liposomal delivery of repurposed antiviral drug saquinavir to macrophages as a host-directed therapy for tuberculosis

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# These authors contributed equally to this work

*Mycobacterium tuberculosis* (Mtb) latently infects approximately a quarter of the world's population and 10 % of these will develop the disease tuberculosis. Mtb infects macrophages, manipulating the proteolytic mechanisms, particularly, by decreasing the expression and activity of lysosomal cathepsins. Consequently, Mtb survives and even replicates inside macrophages concomitant with poor priming of the adaptive immune response. Our group found that the protease inhibitor used in antiretroviral therapy for HIV infection, saquinavir (SQV), restores and further improves the overall activity of cathepsins in Mtb-infected macrophages and more specifically, that of cathepsin S [1]. In this study, we tested the incorporation of SQV in liposomes to establish an improved delivery method for SQV to human monocyte-derived macrophages. Using fluorophore-tagged liposomes we demonstrated the efficiency of SQV-loaded liposome internalization by human macrophages. Additionally, using a general fluorescent substrate of human cathepsins we could observe improved proteolytic activity in treated macrophages. When applying this treatment to Mtb-infected macrophages these effects resulted in better control of the infection. Furthermore, liposomal delivery of SQV reduced the cytotoxicity of the treatment and allowed the usage of higher concentrations without impacting cell viability. By using this strategy, we overcame the cathepsin activity blockade that is induced by the pathogen [2]. The results further demonstrate the efficacy of SQV-loaded liposomes to help control infections by Mtb clinical strains susceptible or resistant to the current antibiotic therapy. Our results suggest the use of liposomal delivery of SQV as a potential complementary therapy against Mtb infection.

Human monocytes were isolated from buffy-coats of healthy human donors provided by the National Blood Institute (Instituto Português do Sangue e da Transplantação, IP, Lisbon, Portugal).

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