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|  <p>UniSR Università Vita-Salute San Raffaele</p> | <p>CANDIDATURA A SUPERVISORE E PROPOSTA PROGETTO DI RICERCA</p> <p>CANDIDACY AS SUPERVISOR & RESEARCH PROJECT</p> | <p>MO 47-27 rev. 00 del 12/01/2023 PO 47 Pag. 3 di 7</p> |
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PROGETTO / PROJECT

Supervisore/Supervisor: Maria Salsone

Titolo/Title: Digital Integrated Monitoring System of Public Health Spending in Patients with Insomnia

Corso /PhD Course Cognitive and Behavioral Sciences

Link alla pagina personale
OSR/UNISR/ Link to OSR/UniSR personal
page:

Descrizione del progetto/Project description (Tra i 2.000 e 3.000 caratteri spazi inclusi/
Number of characters, including spaces: 2.000 - 3.000): **2994**

Insomnia is the most common sleeping disorder in adults, clinically characterized by difficulty initiating or maintaining sleep and often accompanied by symptoms such as irritability or fatigue during wakefulness.¹ Due to its high prevalence in the general population (10-20%; about 50% with a chronic course)¹, and high societal costs², it is now considered one of the major Public Health issues worldwide. Furthermore, gender differences have been reported in a recent meta-analysis³ observational studies, with females 1.5 times at higher risk to have insomnia. Reduced productivity and increased absenteeism are among the main functional consequences of insomnia, while the most significant risk is related to develop mental disorders such as depression and cognitive decline. Diagnosis is clinical, although supported by quantitative measurements derived from polysomnography (PSG) and actigraphy. Cognitive-behavioral and pharmacologic interventions have proven effective treatments in patients with insomnia.¹

An emerging question for managed care organizations in Public Health, is to quantify the economic and social burden of insomnia. A correct evaluation is based on the analysis of two broad categories of costs: direct and indirect. The direct costs include consultations, products, testing and cost-effectiveness of treatments and are generally associated to the consumption of the public resources. The indirect costs include absenteeism and reduced workplace productivity are usually associated with the loss of resources.⁴ It is also interesting to note that, although the indirect costs have received less attention in the literature, these are higher than direct costs. Overall, the direct and indirect insomnia healthcare costs have been estimated to be as high as \$100 billion US dollars for year.⁵

The current PhD project has the ambition to create a digital system to estimate and monitor the economic and social impact of insomnia in Italian population:

1. Providing a digital monitoring system to collect data concerning direct (medical, pharmaceutical, and laboratory expenditure) and indirect (absenteeism and reduced workplace productivity) costs of insomnia for year. De novo patients with insomnia, as well as, patients with chronic insomnia will be considered for the economic analysis. An integrated approach evaluating all the voices of health spending for insomnia is not only novel, but also is need to have a clearer picture of the issue.

2. Applying the advanced machine learning techniques and Artificial Intelligence to develop the decision-making algorithms: i) to predict the health spending related to specific clinical phenotype of insomnia; ii) to timely identify biomarkers to reduce the risk of re-hospitalization in insomnia patients;

Given the important societal and economic burden of insomnia, new strategies to reduce the consumption of the public resources and to improve the health related quality of life in insomnia patients, are needed.

Competenze che deve acquisire lo studente/Skills to be acquired by the student (Max 600 caratteri spazi inclusi/ Number of characters, including spaces: max 600): **519**

The main phases of the project: include the retrospective and prospective collection of the economic data of patients with insomnia



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MO 47-27
rev. 00 del
12/01/2023
PO 47
Pag. 4 di 7

First year:

Critical literature review, data collection, management of data using methods of machine learning and models of Artificial Intelligence;

Second year:

Economic data collection, management and analysis of data by using of machine learning methods and models of Artificial Intelligence; Interpretation of Results;

Third year:

Planning, drafting and submission of scientific papers.

Bibliografia/References (max. 15)

1. Buysse DJ. Insomnia. JAMA. 2013; 309(7): 706-716.
2. Léger D and Bayon V. Sleep Medicine Reviews. 2010, 14(6):379-389.
3. Zeng LN, Zong QQ, Yang Y, Zhang L, Xiang YF, Ng CH, Chen LG, Xiang YT. Gender Difference in the Prevalence of Insomnia: A Meta-Analysis of Observational Studies. Front Psychiatry. 2020 Nov 20;11:577429.
4. Meagan Daley M, Morin CM, LeBlanc M, Grégoire JP, Savard J. The economic burden of insomnia: direct and indirect costs for individuals with insomnia syndrome, insomnia symptoms, and good sleepers. Sleep. 2009;32(1):55-64.
5. Patty TA. Economic burden and managed care considerations for the treatment of insomnia. Am J Manag Care. 2020;26(4 Suppl):S91-S96.

Periodo di studio e ricerca presso Impresa /Centri di ricerca / Pubblica Amministrazione

Il periodo per un minimo di 6 mesi fino a un massimo di 12 mesi è **obbligatorio**, anche non continuativi, per le borse attivate nell'ambito di investimento:

- Transizione digitali e ambientali
- Pubblica amministrazione
- Patrimonio culturale

Sono esclusi quelle di Ricerca PNRR.

Il dottorando svolgerà il periodo **OBBLIGATORIO** presso Direzione Sanitaria HSR, sede Turro per n 6 mesi

Sede legale:

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|-----------|--------------------------------|
| Paese | Italia |
| Città | Milano |
| Indirizzo | Via Stamira D'Ancona 20, 20127 |

Sede operativa principale, se diversa dalla sede legale, presso cui è svolta l'attività di ricerca del dottorando

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| Paese | |
| Città | |
| Indirizzo | |

Periodo di studio e ricerca all'estero

Il periodo per un minimo di 6 mesi fino a un massimo di 12 mesi, anche non continuativi, è **obbligatorio** per le borse attivate in tutti e 4 gli ambiti di investimento (Transizione digitali e ambientali, Ricerca PNRR, Pubblica amministrazione e Patrimonio culturale).

Il dottorando svolgerà il periodo **OBBLIGATORIO** presso Ente Ospedaliero Cantonale-Neurocentro della Svizzera Italiana, Servizio di Medicina del sonno-Ospedale Regionale di Lugano

per n6 mesi

Sede legale:

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|-----------|------------------------|
| Paese | Svizzera |
| Città | Lugano |
| Indirizzo | Via Tesserete 46, 6903 |

Sede operativa principale, se diversa dalla sede legale, presso cui è svolta l'attività di ricerca del dottorando

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| Paese | |
| Città | |
| Indirizzo | |