

## EPP0137

**Motibot: the Virtual Coach for healthy coping intervention in diabetes**

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**Introduction:** Virtual coaches (VCs) can support people with Diabetes Mellitus (DM) by motivating them to better manage their health. Few VCs were aimed at providing psychosocial support. In this regard, motivation is a pivotal construct in diabetes self-management as it allows adults with DM to adhere to the clinical recommendations.

**Objectives:** The present study aimed to develop a VC able to motivate adults with DM to adopt and acquire healthier coping strategies, to decrease symptoms of depression, anxiety, perceived stress, and diabetes-related emotional distress, while also improving their well-being.

**Methods:** A total of 12 adults with DM (M=27.91 years; SD=9.82) interacted with a VC, called Motibot using Telegram for an overall duration of 12 sessions. Participants completed a battery of instruments at pre-, post-intervention and follow-up.

**Results:** highlighted a decrease in anxiety, and depression symptoms between pre-, post-intervention and follow-up, as also showed by the results that emerged through the text mining. Motibot was perceived as motivating and encouraging in the adoption of appropriate coping strategies, such as mindfulness practices. Motibot was also perceived as trustworthy, reflective, and stimulating in its dialogical interaction. Indeed, adults felt involved in the interaction with Motibot, thereby showing an overall perception of a better quality of life, in the absence of diabetes distress.

**Conclusions:** This study sheds light on the importance of VCs in health care for people with DM for psychosocial support. This is the first experimental study on the matter, and thus, further iterations of the intervention are needed using a larger sample size.

**Disclosure:** No significant relationships.

**Keywords:** virtual coach; healthy coping; diabetes mellitus; diabetes distress

## EPP0136

**A case study for assessing the utility of a decision tree based learning algorithm in mental health inpatient care quality management**

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**Introduction:** There is limited knowledge about the potential role of machine learning (ML) in quality improvement of psychiatric care.

**Objectives:** Our case study was to determine whether ML decision trees used on patient databases are suitable for focussing on specific patient population samples of mental healthcare quality audits. Populations were identified by patient and care provider variables, and the time of treatment. Outcomes were defined as hospital mortality, over-long hospitalization (over average +1SD or +2SD); and short hospitalization (under average -1SD; under 3 days).

**Methods:** We conducted a Split Train Test in Python for our outcomes on national mental health inpatient turnover data (2010 through 2018 for training and 2019 for testing). A well-fitting decision tree had the area under the curve (AUC) of the receiver operating characteristic (ROC)  $\geq 0.7$ , and specificity  $\geq 0.9$ . Performing qualitative analyses of decision trees, we rejected the ones with little clinical relevance.

**Results:** Decision trees fit well (AUC = 0.7 to 0.9; specificity = 0.7 to 1.0; sensitivity = 0 to 0.69). For hospital death cases, the decision tree had AUC = 0.86, no difference after controlling for the types of hospital units, and was clinically relevant. Models predicting over-long hospitalization fit well (AUC=0,9); however, controlling for care pathways, good fit and sensitivity both vanished. No valid models emerged for undertime discharges. The decision trees revealed unique combinations of variables.

**Conclusions:** Our ML decision trees used on healthcare databases proved promising for focussing quality audit efforts. Narrative analysis for the clinical contexts of the decision trees is indispensable.

**Disclosure:** No significant relationships.

**Keywords:** Quality management; healthcare indicators; Big Data; machine learning

**Old Age Psychiatry 01**

## EPP0137

**Is frailty a predictor of mortality in late-life depression?**

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**Introduction:** Frailty is a clinical phenotype that predicts negative health outcomes including mortality. Similar to frailty, late-life depression is also associated with increased mortality rates.

**Objectives:** Our objective was to examine whether frailty and frailty related biomarkers predict mortality among depressed older patients.

**Methods:** Among 378 older patients ( $\geq 60$  years) with a depressive disorder (DSM-IV criteria) we examined whether frailty predicts time-to-death during a six-year follow-up using Cox-regression analyses adjusted for confounders. Baseline data were collected between 2007 and September 2010. Frailty was defined according to Fried's criteria (muscle weakness, slowness, exhaustion, low activity level, unintended weight loss). Similarly, we examined the predictive value of three inflammatory markers, vitamin D level, and leucocyte telomere length, and whether these effects were independent of the frailty phenotype.

**Results:** During follow-up, 26.2% frail depressed patients died compared to 12.7% non-frail depressed patients ( $p < .001$ ). Adjusted for confounders, the number of frailty components was associated with an increased mortality rate ( $HR = 1.38$  [95%CI: 1.06–1.78],  $p = .015$ ). All biomarkers were prospectively associated with mortality, but only higher levels of hsCRP and lower levels of vitamin D were independent of frailty associated with mortality.

**Conclusions:** Frailty identifies older patients at increased risk of adverse negative health outcomes in late-life depression. Therefore, among frail-depressed patients, treatment models that include frailty-specific interventions might reduce mortality rates.

**Disclosure:** No significant relationships.

**Keywords:** Depression; Frailty; mortality

### EPP0138

#### Associations of neuroinflammatory parameters with clinical features in patients with mild cognitive impairment and dementia

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**Introduction:** Mild cognitive impairment (MCI) represent a state of cognitive function between normal aging and dementia and does not always progress to dementia. Neuroinflammation has a key role in the pathogenesis of neurodegeneration. Determining the associations of neuroinflammatory markers in the blood with clinical disease severity may be useful for early diagnosis of cognitive impairment and prediction of the development of severe dementia.

**Objectives:** The aim of our study was to compare the serum concentration of a panel of inflammatory markers in patients with MCI and dementia as well as their associations with clinical symptoms.

**Methods:** Patients were evaluated using Mini-Mental State Examination (MMSE), Clock Drawing Test (CDT), Montreal Cognitive Assessment scales (MoCA), Clinical Dementia rating (CDR) and Hospital Anxiety Depression Scale (HADS). We determined the serum concentration of a panel of inflammatory markers (25 units) cytokines, chemokines, growth factors and several others on Multiplex and prepared multivariate analysis to investigate associations between clinical features and serum concentration.

**Results:** Patients with dementia had lower scores on scales than the control and MCI groups. MCI patients were equal to the control group, except for the MMSE scale. EGF, eotaxin-1, GRO- $\alpha$ , IP-10, IL-8, MIP-1 $\beta$ , sCD40L, TNF- $\alpha$ , MDC and MCP-1, VEGF were differ between groups. Multivariate analysis identified some neuroinflammatory parameters associated with the severity of the disease.

**Conclusions:** We identified some neuroinflammatory parameters associated with dementia and MCI. Many of them have been poor described and data is contradictory. It is necessary to investigate these parameters as potential biomarkers of neurodegeneration in further studies.

**Disclosure:** No significant relationships.

**Keywords:** MoCA; MCI; MMSE; Dementia

### EPP0139

#### The impact of Mild Behavioral Impairment on the individual's level of psychological, social, and occupational functioning

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**Introduction:** Mild behavioral impairment (MBI) is a neurobehavioral syndrome characterized by later-life emergent neuropsychiatric symptoms, which represent an at-risk state for incident cognitive decline and dementia.

**Objectives:** Our objective was to prospectively evaluate the impact of MBI on global functioning in patients  $\geq 50$  years with a major depressive episode (MDE) at baseline.

**Methods:** We recruited 51 patients  $\geq 50$  years presenting with a MDE at the outpatient clinic of the 2<sup>nd</sup> Psychiatric Unit of the University of Pisa. Then we selected those patients who had a follow-up of at least two months and excluded subjects with a neurodegenerative disease. The included patients ( $N = 25$ ) were subdivided in a subgroup with MBI and a subgroup without MBI. The subgroups have been compared for the difference between baseline and follow-up score in global functioning according Global Assessment of Functioning (GAF) scale. Comparative analyses were conducted by means of mixed anova.

**Results:** There was a significant interaction effect between time and the MBI condition ( $F[1, 23] = 4.12$ ,  $p = 0.05$   $\eta^2 p 2 = 0.15$ ). Descriptive statistics showed that while patients without MBI showed higher GAF score at follow-up (mean = 65.12) compared to GAF score at baseline (mean = 54.37), patients with MBI showed, on average, the same GAF score at follow-up (mean = 54.44) and at baseline (mean = 54.44).

**Conclusions:** In patients with MDE, the presence of MBI is related to a lack of improvement in psychological, social, and occupational functioning in the short-term

**Disclosure:** No significant relationships.

**Keywords:** Mild Behavioral Impairment (MBI); Neuropsychiatric symptoms; Preclinical dementia; global functioning

### EPP0140

#### Traumatic brain injury alters presentation of mild behavioral impairment domains across progression of all-cause dementia

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