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The Relationship between depressive symptom, emotional status, carotid atherosclerotic burden in Corinthia Study

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Introduction: It has been long hypothesized that emotional factors and depression may play a role in the development and progression of atherosclerotic lesions.

Purpose: The aim of this study was to examine the association between depression, arterial stiffness and atheromatous burden in carotid arteries.

Methods: Corinthia study is a cross-sectional epidemiological study based on 2043 inhabitants (age 40–99 years) of Corinthia region in Greece. IMT was measured in the left and right common carotid artery, carotid bulb and internal carotid artery. The average of the measurements (AveregIMT) and the maximum thickness (MaxIMT) were determined as the representative value of carotid atherosclerosis burden. Pulse wave velocity (PWV) was used to evaluate arterial stiffness. The Zung self-rating depression scale was used to evaluate depressive symptoms in subjects younger than 65 years old.

Results: From the studied individuals 42% presented depression (mild, moderate/severe). Subjects with depression were older (55 ± 8 years vs. 54 ± 8 years, $p=0.04$) and female (70% vs. 51%, $p<0.001$). PWV was increased in subjects with depression compared to subjects with no depression (8.29 ± 2.44 m/sec vs. 7.85 ± 1.86 m/sec, $p=0.008$). There was a stepwise increase in AveregIMT, Max-IMT, and PWV according to depression scale (Figure 1). Importantly, PWV was significantly associated with Zung score even after adjustment for many confounders ($b=0.023$, $p=0.013$) (Figure 1).

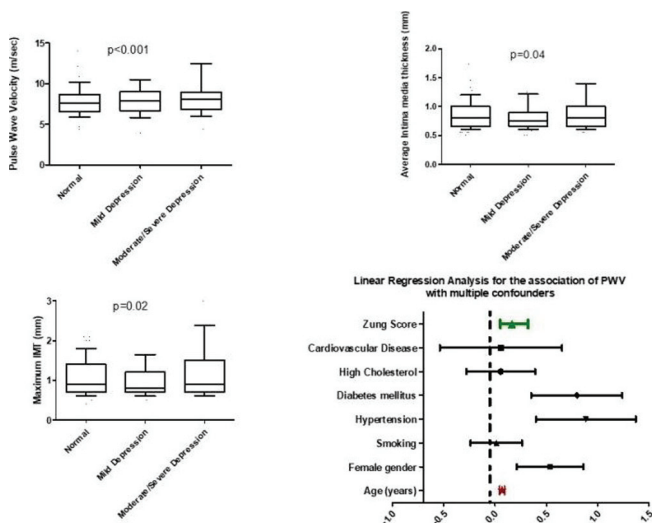


Figure 1

Conclusion: There is an association between depression, atherosclerosis and carotid atheromatous burden highlighting the interplay between cardiovascular diseases and emotional status.

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Depressive symptoms are major determinant of restricted health-related quality of life in patients with heart failure

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Background: Numerous studies have shown severely impaired health-related quality of life (HRQOL) in heart failure (HF) patients. The aim of this study was to assess contribution of sociodemographic variables, comorbidities and depressive symptoms to HRQOL in a sample of Slovenian HF patients.

Method: A cross sectional study assessing the prevalence of HF in general population aged 55 years or more has been conducted in selected geographical region of Slovenia. Overall, the study entailed 702 persons that were screened with NT-proBNP. Following a detailed diagnostic visit, HF diagnosis was confirmed in 90 of 307 participants with elevated NT-proBNP concentrations (≥ 125 pg/mL). HRQOL data were obtained using the Short-Form 12 Health Survey (SF-12). Depressive symptoms were measured by the Patient Health Questionnaire (PHQ-9) and satisfaction with life by the Satisfaction With Life Scale (SWLS). Multivariate forward regression analyses were conducted to analyse the impact of different variables on the variance of HRQOL in participants with confirmed HF.

Results: Participants with confirmed HF were 75.8 ± 8.3 years old, 43.3% male, New York Heart Association (NYHA) functional class I-III, with mean left ventricular ejection fraction (LVEF) 60.6 ± 10.8 . Significant correlations with all eight SF-12 health domains were found for the PHQ-9 ($r=-0.32$ to -0.56 ; $p<0.001$) and NYHA functional class ($r=-0.30$ to -0.40 ; $p<0.001$). Satisfaction with life and ischemic heart disease significantly correlated with most, diabetes mellitus and arterial hypertension with some HRQOL domains, while associations of sociodemographic factors (such as age, gender) and measures of HF severity (LVEF, NT-proBNP) with HRQOL domains were non-significant. In multivariate forward regression analyses, the PHQ-9 summary score explained the most part of HRQOL variance in all SF-12 health domains ($r^2 = 0.16$ to 0.46) but physical functioning domain.

Conclusions: LVEF and NT-proBNP did not have significant role in explaining HRQOL, while depressive symptoms are the main determinants of impaired HRQOL in this study. Therefore recognizing and treating depression in HF patients is crucial in initiating adequate treatment.

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Prevalence of depression and clinical anxiety in Italian patients with cardiovascular disease

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Background: Depression and clinical anxiety are frequently present in patients with Cardiovascular Disease (CVD). Because of their potential negative impact on quality of life and cardiac outcomes, recent international guidelines recommend routine psychological screening of all cardiac patients with easy-to-use screening tools. However, despite the availability of these validated tools and effective treatments, depression and anxiety are still significantly underrecognized and undertreated in patients with CVD.

Purpose: Due to the limited availability of systematic data, the present study is aimed to provide new data on the prevalence of depression and clinical anxiety in CVD performing a screening sweep on cardiovascular patients admitted to a cardiologic hospital in Italy.

Methods: Patients (N=496; 164 females (mean age: 62 years, SD: 17.1) and 332 males (mean age: mean age: 65 years, SD: 15.3)) were asked to fill in two psychological scales: the Patient Health Questionnaire (PHQ9) and the Generalized Anxiety Disorder questionnaire (GAD7), when being admitted to hospital. Patients who scored positively to one or both the questionnaires were interviewed to confirm the results.

Results: 26.41% of patients scored positively to the PHQ9 (score >5) and 27.82% scored positively to the GAD7 (score >5). Clinical interviews confirmed these data. A significant number of patients presented comorbidity between clinical depression and anxiety. No differences were found by gender. Fifteen patients also expressed a suicidal ideation (6 female; 9 males).

Conclusions: These percentages are slightly higher compared to the results reported by previous studies. These data, together with growing literature on the prevalence of depression and anxiety in patients with heart failure suggest the need of a Biopsychosocial Holistic Model of Cardiovascular Health in which biological, psychological, and social aspects interact within each person and are integrated into health. Moreover, people's (patients and healthcare professionals) awareness about the possible effects of psychosocial aspects in the etiology and development of CVD should be increased to reduce the risk of comorbid conditions and the consequences of such conditions on the prognosis of CVD.

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Impact of depression on all-cause mortality in patients with congestive heart failure after cardiac resynchronization therapy

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Purpose: To assess the association between depression and all-cause mortality in patients with congestive heart failure (CHF) after cardiac resynchronization therapy (CRT).

Methods: The study enrolled 156 patients (mean age 55.3 ± 9.6 years, 84% men) with CHF and implanted cardiac devices for resynchronization therapy. Mean duration of follow-up was 51.6 ± 33.4 months. The Beck Depression Inventory (BDI) was used to measure depressive symptoms. Cox proportional hazards regression model was used to estimate hazard ratios (HR) with 95% confidence interval (95% CI) for impact of depression on all-cause mortality. HR was calculated after adjustment for the following confounders: age, gender, smoking status, hypertension, diabetes mellitus, previous myocardial infarction, body mass index, hypercholesterolemia, left ventricular ejection fraction, number of hemodynamically significant lesions of the coronary arteries and functional class of CHF.

Results: In 66 patients (42.3%) no symptoms of depression were detected, 57 patients (36.5%) had mild depression and 33 patients (21.2%) had severe symptoms of depression. The major clinical-functional and laboratory parameters did

not differ between the groups. Among individuals without symptoms of depression, males prevailed (90.9% in the non-depressed group vs 69.7% in the group with severe depression, $p=0.007$). Hypercholesterolemia was more frequent in patients with depressive symptoms (43.9% in the non-depressed group vs 63.3% in the group with depressive symptoms, $p=0.02$). During follow-up period 33 patients died (21.2%). Adjusted HR for all-cause mortality on depression score was 1.05, 95% CI 1.01–1.09, $p=0.02$. Patients without depression were accepted as a reference group with HR=1.0 for analysis of categorical indicator. HR was 1.08, 95% CI 0.46–2.54, $p=0.9$ in patients with mild depressive symptoms and 2.92, 95% CI 1.17–7.32, $p=0.02$ in patients with severe depressive symptoms.

Conclusion: Depression was associated with gender and hypercholesterolemia. Severe symptoms of depression are independently associated with all-cause mortality in patients with CHF and implanted cardiac devices for CRT.

P5407
Predicting adherence to internet-delivered cognitive behaviour therapy for comorbid symptoms of depression and anxiety after myocardial infarction

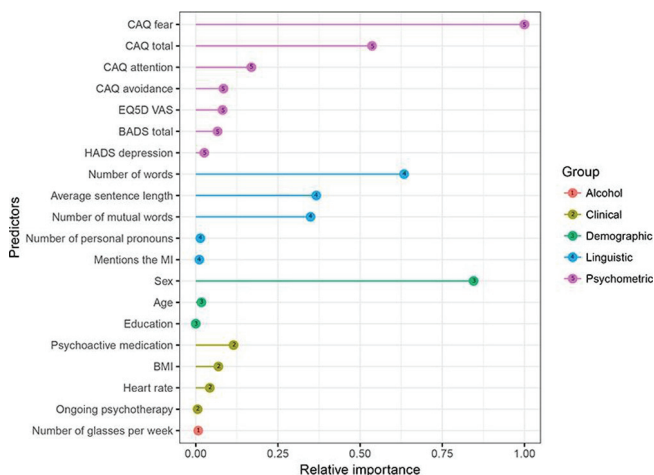
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Background: Psychotherapeutic treatment for the subgroup of patients with MI that also suffer from comorbid symptoms of anxiety and/or depression (MI-ANXDEP) is part of cardiac rehabilitation (CR). Adherence to a range of treatments and lifestyle advice is crucial for risk reduction in these patients. Understanding the relative importance of predictors of adherence to internet-delivered cognitive behaviour therapy (ICBT) for MI-ANXDEP could improve their targeted care.

Purpose: We estimated the relative importance of a range of established and novel predictors of adherence to ICBT for MI-ANXDEP patients.

Method: The study sample consisted of 90 MI-ANXDEP patients (58.4 years, 62% men) recruited from 25 hospitals in Sweden who were randomised to active treatment in the ICBT trial U-CARE Heart. Time-point of prediction was at completion of the first homework assignment (HWA), and adherence was gauged at the end of treatment (48% adherers). Adherence was defined as completing at least the first two HWAs within the 14-week treatment period. A supervised machine learning (ML) procedure, applying 3x10 cross-validated recursive feature elimination with a random forest model as internal classifier, estimated the relative importance of predictors for adherence from a range of patient demographic, clinical, and linguistic variables that were available at completion of the first HWA.

Result: Out of 34 potential predictors, ML selected an optimal set of 19 predictors (Accuracy 0.64, 95% CI 0.61–0.68). The strongest predictors for being classified as adherent were in order of relative importance (1) higher self-rated cardiac fear (CAQ fear), (2) female sex, (3) more words used by the patient to answer the first homework assignment (Number of words), (4) higher self-rated general cardiac anxiety (CAQ total), and (5) a higher rate of words used by the patient that were identical with words prompted by the first homework assignment (Number of mutual words), as depicted in the figure.



Conclusion(s): It is of clinical importance to understand poor adherence to ICBT treatment in the high risk MI-ANXDEP subpopulation. Higher cardiac anxiety and female sex were the strongest predictors for adherence. A novel finding was that

linguistic variables were important for predicting adherence, particularly the number of words used may signify the degree of personal investment and motivation for treatment, and the number of mutual words used may be a proxy for therapeutic alliance within the treatment. Education had no predictive value. Future research should investigate potential causal mechanisms, and whether these findings replicate outside of Sweden, in larger samples, and for similar eHealth treatments.

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P5408
The effects of different preventive counseling programs on illness perception in patients with paroxysmal atrial fibrillation after catheter ablation

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Background: Illness perception is a major contributor to patient's behavior yet little is known about cognitive representation of illness in patients (pts) with atrial fibrillation (AF).

Purpose: To assess the impact of different preventive counseling programs on illness perception in pts after catheter ablation (CA) performed for paroxysmal AF.

Methods: This is a prospective randomized controlled study with 3 parallel groups of pts with paroxysmal AF after CA (radiofrequency or cryoablation). Pts were randomized into 3 groups in 1:1:1 ratio. During hospitalization for CA pts from all groups received single-session preventive counseling with focus on their individual cardiovascular risk factors profile. After discharge pts from Group 1 received remote preventive counseling by phone and pts from Group 2 - by e-mail every two weeks for the first 3 months after enrollment (a total of 6 sessions). Group 3 received usual care. Illness perception was assessed using The Brief Illness Perception Questionnaire (BIPQ). Both overall score which represents the degree to which illness is perceived as threatening or benign and scores for 8 IP dimensions were calculated.

Results: A total of 93 pts aged 37 to 72 years were enrolled (mean age 56.48±7.41 years, 57% men). The groups were well balanced according to demographic and clinical features. At 1 year of follow-up pts from both intervention groups experienced significant improvement of the overall illness perception score vs. control (table). This improvement was mainly driven by significant increase of personal and treatment control and by significant decrease of consequences, concern about their condition and emotional representation to the disease in both groups. The timeline and understanding of the disease did not change significantly.

Conclusions: Preventive counseling programs with remote 3 months support via phone and e-mail improve the illness perception in AF pts after CA what may positively affect their health behavior.

NUTRITION, MALNUTRITION AND HEART DISEASE

P5409
Low-carbohydrate diets and all-cause and cause-specific mortality: a population-based cohort study and pooling prospective studies

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Background: Little is known on the long-term association between low-carbohydrate diets (LCD) and mortality.

Purpose: We aimed to evaluate the link between LCD with total and cause-specific mortality by applying on both individual data and pooling prospective studies.

Methods: Data from National Health and Nutrition Examination Survey (NHANES) (1999–2010) were collected. We used adjusted Cox regression to determine the risk ratio (RR) and 95% confidence interval (95% CI), as well as random effects models and generic inverse variance methods to synthesize quantitative and pooling data, followed by a leave-one-out method for sensitivity analysis.

Results: Based on the data from NHANES with 24825 participants (mean age of 47.6 years, comprising 48.6% men and 51.4% women), after adjustment, participants in the top quartile (Q4) of LCD had the highest risk of total (32%; hazard ratio [HR] 1.32 [1.14–2.01], $p<0.001$), cardiovascular (CVD) (50%; 1.50 [1.12–

Abstract P5408 – Table 1

Overall score of illness perception, mean ± SD*	Group 1 (support via phone)	Group 2 (support via e-mail)	Control group	Differences between group 1 vs. control	Differences between group 2 vs. control
Baseline	45.1±12.1	43.73±9.26	45.05±9.87		
After 12 months	29.85±15.3	29.67±7.7	38.75±8.16	$p<0.05$	$p<0.001$