Association between social isolation and inflammatory markers in depressed and non-depressed individuals: Results from the MONICA/KORA study.

INTRODUCTION: Depressed individuals not only suffer from chronic low grade inflammation, but also exhibit an inflammatory hyper-responsiveness to acute stress. We investigate whether chronic stress also induces an exaggerated inflammatory response in individuals with increased depression features. As model for chronic stress, social isolation was chosen.

METHODS: Interleukin (IL)-6 and hs-CRP levels were assessed in 1547 subjects (847 men and 700 women), derived from the population-based MONICA/KORA study. Standardized questionnaires were used to assess depressed mood (depression and exhaustion subscale) and social isolation (social network index). The relationship between the two inflammatory markers, social isolation and depressed mood was examined taking into account interactions social isolation×depressed mood using multivariable linear regression models, adjusted for age, BMI, smoking, alcohol, and physical activity. Analyses were performed in men and women separately.

RESULTS: We observed a significant interaction between depressed mood and social isolation regarding IL-6 and hs-CRP, respectively in men (p-value=0.02 for IL-6 and <0.01 for hs-CRP), evidencing a substantial synergistic effect of social isolation, and depressed mood on inflammatory
responses. Furthermore, depressed and socially isolated men had highly significantly elevated IL-6
levels (geometric mean: 3.76 vs. 1.92pg/ml, p-value<0.01) and heightened hs-CRP levels (geometric
mean: 2.01 vs. 1.39mg/l, p=0.08) in comparison with non-depressed and socially integrated men. In
women, no significant associations were seen. CONCLUSION: The interaction of depressed mood
and social isolation elicits a substantial synergistic impact on inflammatory markers in men, but not in
depressed women.