

# Abstract

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## Possible connections among job stress, depressive symptoms, lipid modulation and antioxidants.

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**BACKGROUND:** Oxidative/antioxidative status may be related to psychological stress or pathogenesis of depression.

**SUBJECTS AND METHODS:** Participants were selected from 381 female nurses working in a university hospital, and the Brief Job Stress Questionnaire was utilized to assess them. Nurses with high job stress (JS) ( $n = 18$ ) and with low JS ( $n = 15$ ) consented to participate in this study. Depressive symptoms were assessed by the Centre for Epidemiologic Studies Depression scale (CES-D). Cholesterols, lipid peroxidation (malondialdehyde, MDA) and antioxidants in the plasma were measured.

**RESULTS:** High JS participants exhibited significantly higher CES-D scores ( $t = 3.34$ ,  $p < 0.005$ ), and significantly lower concentrations of total cholesterol (TC), low density+very low density lipoprotein cholesterols (LDL+VLDL), alpha-tocopherol, and beta-carotene compared with low JS participants ( $t = 2.69$ ,  $p < 0.05$ ;  $t = 3.46$ ,  $p < 0.005$ ;  $t = 2.96$ ,  $p < 0.05$ ;  $t = 2.98$ ,  $p < 0.05$ , respectively). However, the reductions in plasma indicators were substantially weakened after controlling for lifestyle factors with the exception of LDL+VLDL and alpha-tocopherol. In addition, the significance of alpha-tocopherol concentrations appeared to depend on cholesterol levels. CES-D scores correlated positively with plasma MDA levels, the MDA/TC ratio and the MDA/LDL+VLDL ratio among the low JS group ( $r = 0.69$ ,  $p < 0.001$ ;  $r = 0.79$ ,  $p < 0.001$ ;  $r = 0.75$ ,  $p < 0.005$ , respectively), whereas there were no correlations among the high JS group. After controlling for lifestyle covariates, the relationship between CES-D scores and the MDA/LDL+VLDL ratio remained significant ( $\beta = 0.95$ ,  $p < 0.05$ ) using a multiple linear regression model ( $F = 3.61$ ,  $p < 0.05$ ).

**LIMITATIONS:** Sample numbers in each JS group were relatively small.

**CONCLUSIONS:** Psychological stress may reduce the plasma levels of LDL+VLDL accompanying an alpha-tocopherol decrease. There appeared to be a correlation between elevated MDA and depressive symptoms in low JS participants.

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