

THE EFFECT OF CHRONIC ANTIDEPRESSANT TREATMENT ON SERUM BRAIN-DERIVED NEUROTROPHIC FACTOR LEVELS IN DEPRESSED PATIENTS

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Aim

Recent studies suggested a role of brain-derived neurotrophic factor (BDNF) in depression. While BDNF levels are lower in depressed patients, antidepressant treatment increases serum BDNF levels of depressed patients. Our study aims to test the effect of antidepressant treatment on serum BDNF levels in patients with a depressive disorder.

stress

▲ glucocorticoids

▼ CREB, BDNF

hippocampal atrophy

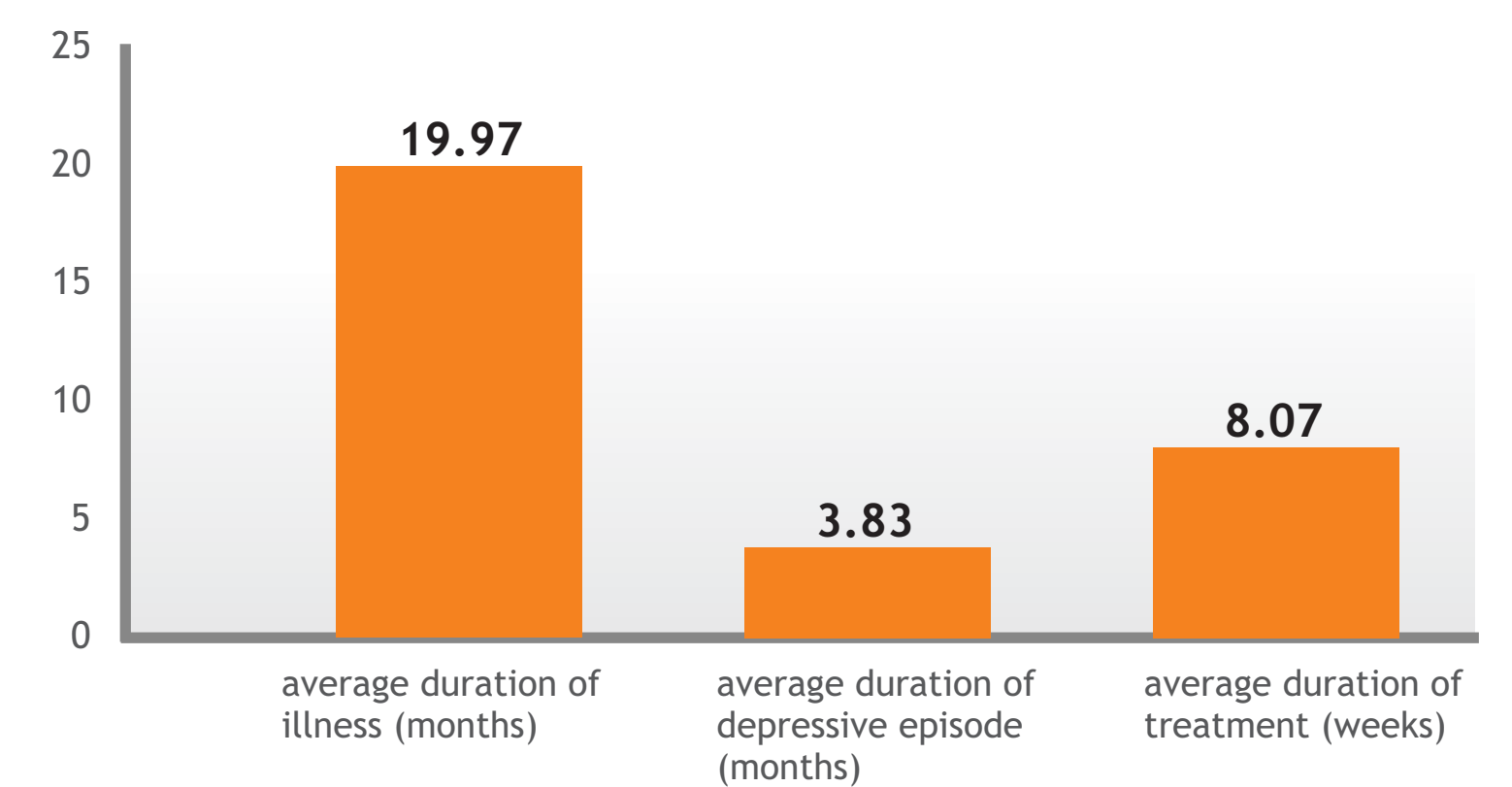
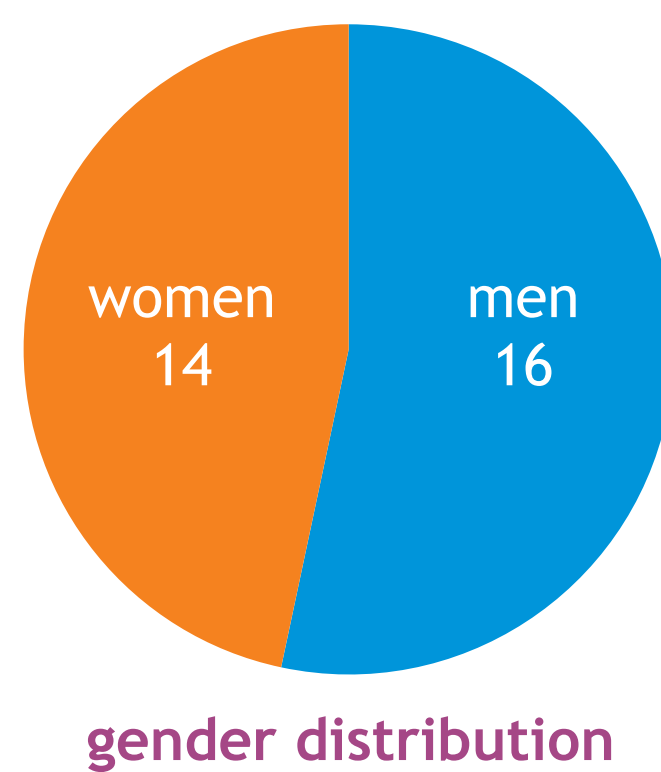
DEPRESSION

Methodology

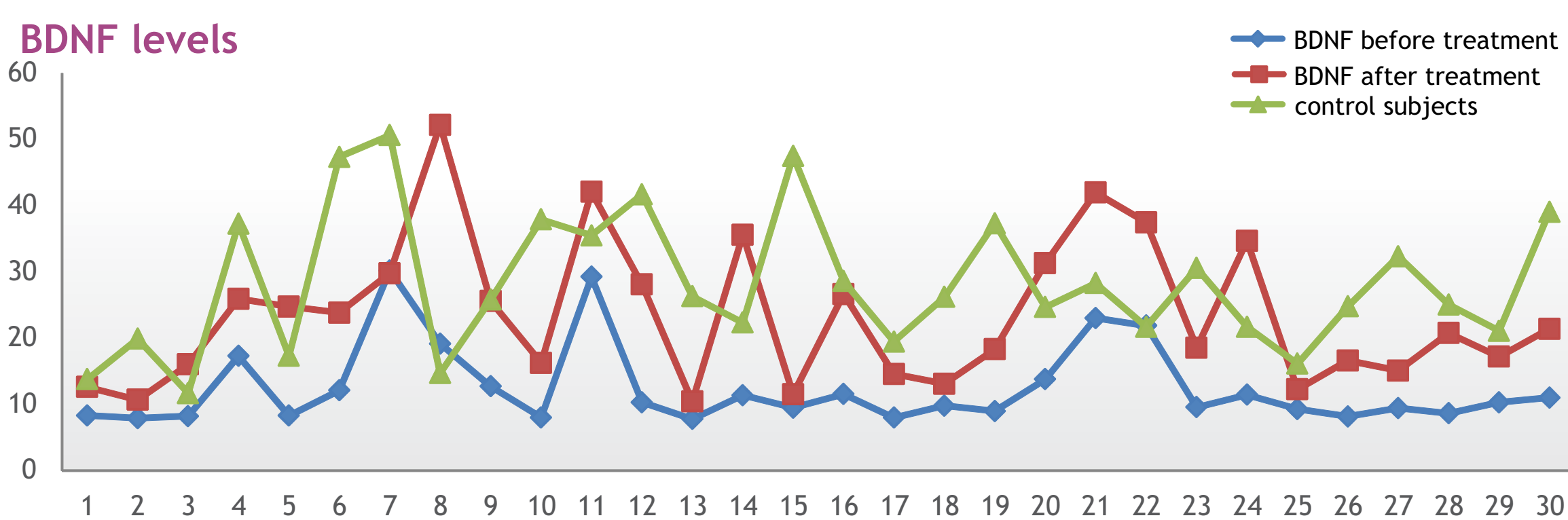
Thirty patients diagnosed with depressive episode according ICD-10 are included in the study. 23 of the patients had their first episode and were drug-naive; the other 7 patients were drug-free for at least 4 weeks. The severity of depression was assessed with Hamilton Depression Rating Scale (HDRS). The control group consisted of 30 age- and sex-matched subjects without any psychiatric disorder. Blood samples were collected at the baseline and after achieved remission (minimum decrease of HDRS of 50%).

Results

At the baseline the mean serum BDNF level was 12.51 ± 6.17 ng/ml and the mean HDRS score was 28.4 ± 3.65 . Serum BDNF levels of the study group were significantly lower than in the control group (26.89 ± 9.67 ng/ml). At the end of the study, the mean serum BDNF level was 23.51 ± 9.67 ng/ml whereas the mean HDRS score was 7.47 ± 3.18 . From the baseline to the remission after 8 weeks of treatment, the increase in serum BDNF level and the decrease in HDRS score were statistically significant, respectively. When we compared the serum BDNF levels of depressed patients at remission to that of the controls, there was no statistically significant difference.



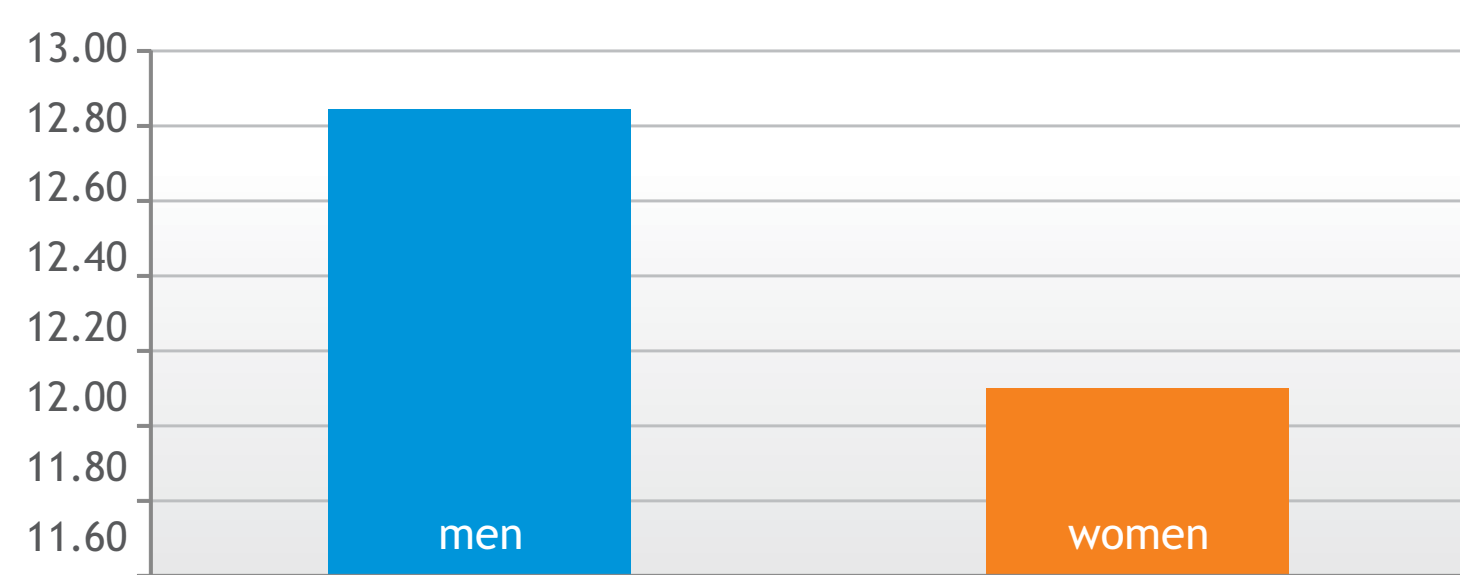
BDNF levels



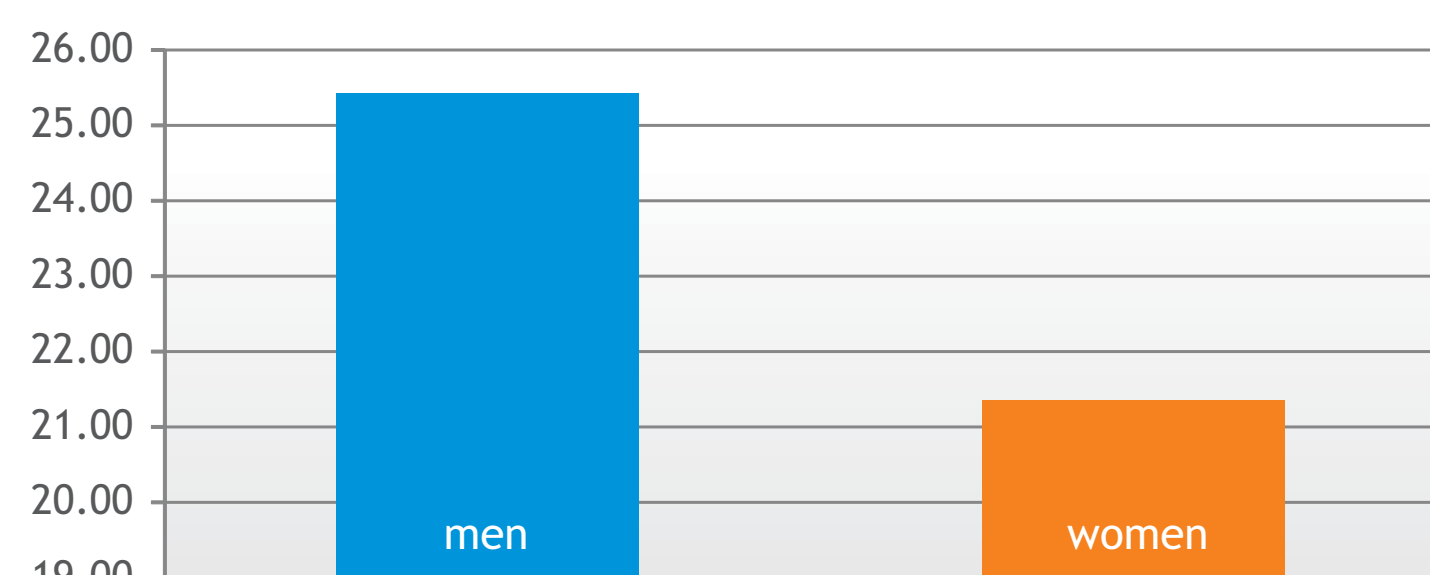
Statistical significance between serum BDNF levels before and after antidepressant treatment and control subjects

statistical significance between serum BDNF levels before and after antidepressant treatment	statistical significance between serum BDNF levels before and control subjects	statistical significance between serum BDNF levels after antidepressant treatment and control subjects
p=0.0000	p=0.000005	p=0.1033

Mean values of serum BDNF before treatment



Mean values of serum BDNF after treatment

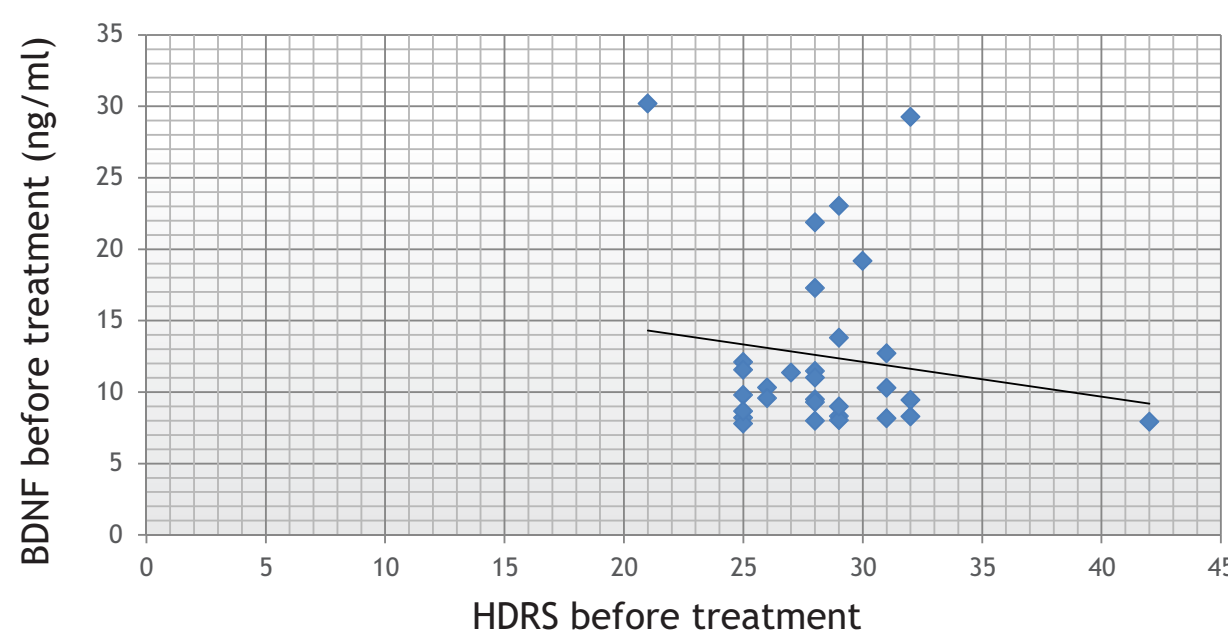


Mean values of HDRS

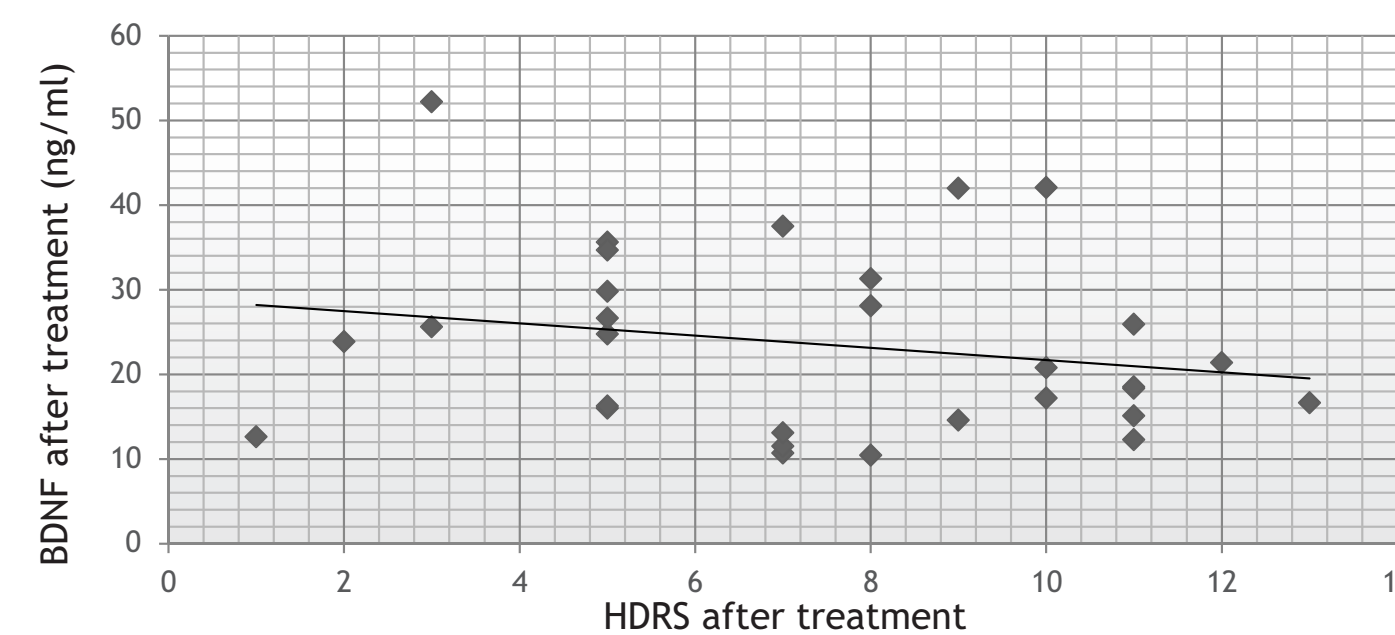
Mean values of HDRS before treatment: **28.4±3.65**

Mean values of HDRS after treatment: **7.47±3.18**

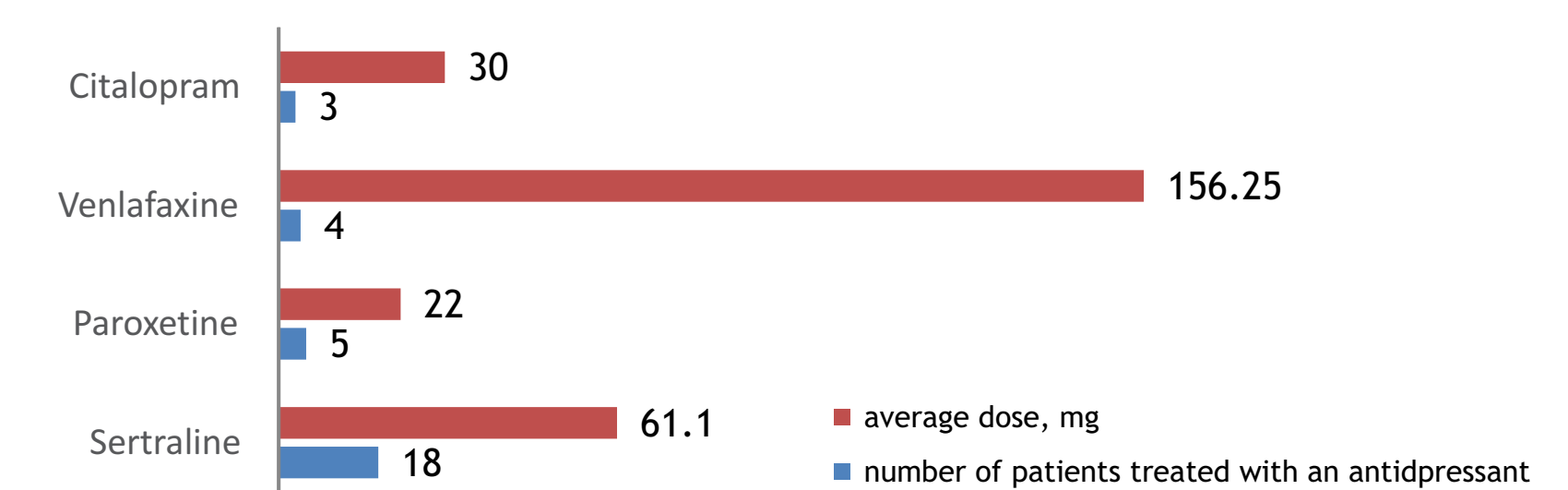
Corellation between BDNF and HDRS before treatment (r = -0.144)



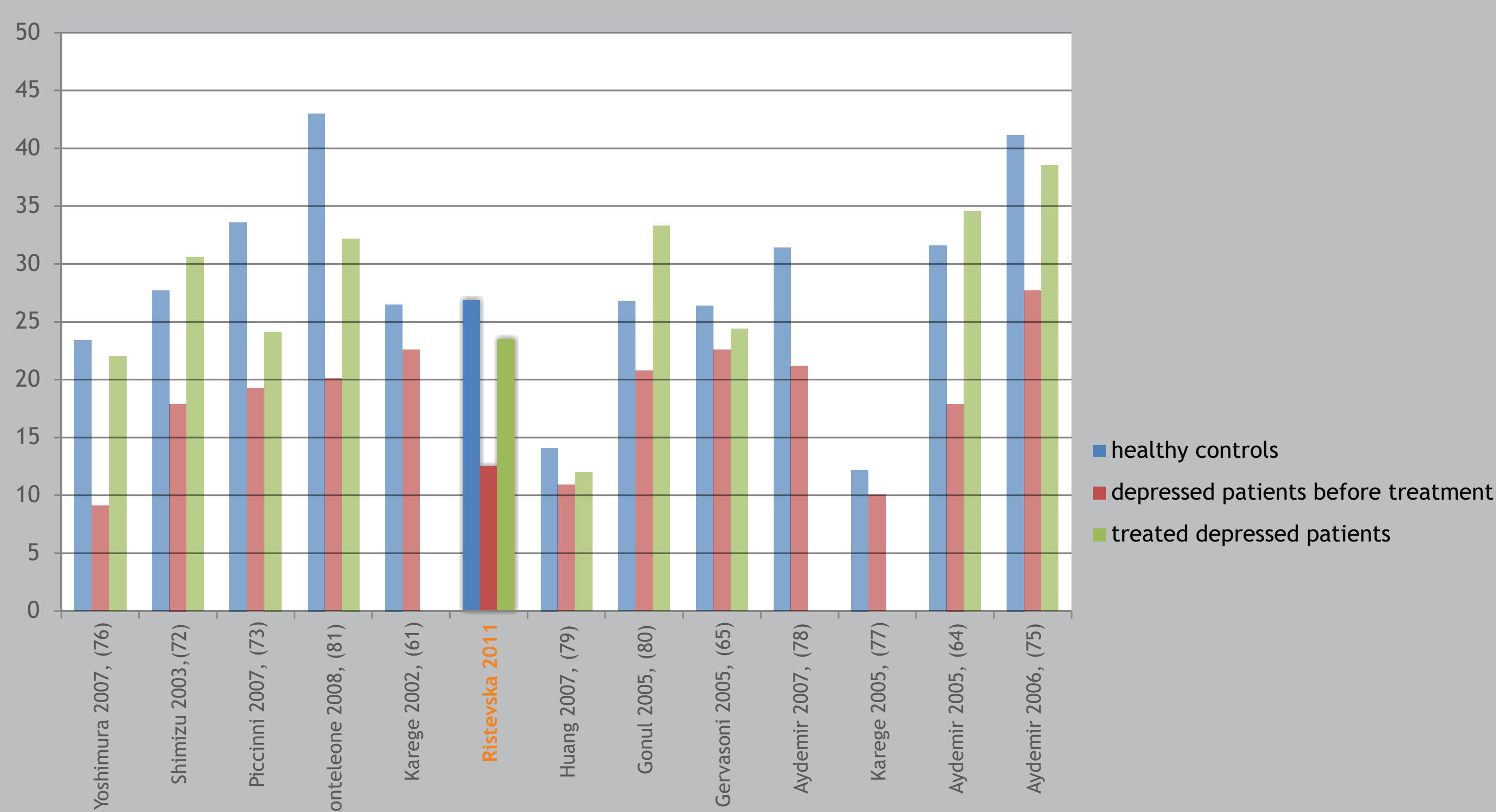
Corellation between BDNF and HDRS after treatment (r = -0.214)



Used antidepressants



Mean serum BDNF values: literature review



Conclusion

Our study suggests that low BDNF levels may play a pivotal role in the pathophysiology of depression and that antidepressants may increase BDNF in depressed patients, which may be considered as a nonspecific peripheral marker of depression.

References

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- Gonul AS, Akdeniz F, Taneli F et al. Effect of treatment on serum brain-derived neurotrophic factor levels in depressed patients. *Eur. Arch. Psychiatry Clin. Neurosci.* 2005; 255: 381-386.
- Huang TL, Lee CT, Liu YL. Serum brain-derived neurotrophic factor levels in patients with major depression: effects of antidepressants. *J. Psychiatric Res.* 2007; 45:521-525.